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PRONUNCIATION

The pronunciation of titles is indicated by accenting the word or by respelling it phonetically in italics. In the phonetic spelling, letters are used to indicate the sounds which they most commonly represent.

A vowel is *short* when followed by a consonant in the same syllable, unless the syllable ends in silent *e*.

A vowel is *long* when standing alone or in a syllable which ends in silent *e* or when ending an accented syllable.

S is always soft, and never has the sound of *z*.

The foreign sounds which have no equivalent in the English language are represented as follows:

K for the German *ch*, as in Bach: (**Bach**, *baK*).

N for the French *n*, as in Breton: (**Breton**, *bre toN*).

ö for the German *ö*, as in Göttingen: (**Göttingen**, *gö'ting en*).

ü for the German *ü*, as in Blücher: (**Blücher**, *blüK'ur*).

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HELIOPOLIS, *he le op' o lis*, (City of the Sun), the Greek name of an ancient city, called variously On, Rameses, or Beth-shemesh in the Hebrew Scriptures, and now called Matariah. It is situated a little north of Memphis and was one of the most ancient and extensive cities of Egypt under the Pharaohs. During the flourishing ages of the Egyptian monarchy, the priests taught within its temples, and both Eudoxus and Plato visited its famous schools. Here Joseph and Mary are said to have rested with the infant Christ. Near the village stands the Pillar of On, supposed to be the oldest Egyptian obelisk, $67\frac{1}{2}$ feet high and 6 feet broad at the base. The obelisks known as Cleopatra's needles, of which one is in Central Park, New York City, and the other in London, England, were first erected here.

HELIOS, *he'lios*, in Greek mythology, the sun god, the offspring of Hyperion and Theia, and brother of Aurora. According to the legend his home was a magnificent palace beyond Colchis, from which he came in the morning to bring light, and to which he returned in the evening in a golden boat with wings. In art he was represented as a young man of strength and beauty, with flowing hair, and a crown of rays.

HELIO THERAPY, *he le o thehr' a pe*, a system of treating disease by exposing the bare skin to the rays of the sun. While the curative virtues of sunlight have long been recognized, the systematic use and development of the treatment began in the nineteenth century. Natural sunlight has become widely used, as well as artificial light, and sun's rays are now widely used in treatment of tuberculosis, rickets, asthma, and certain skin ailments. Precautions should be taken against over-exposure.

HELIOTROPE, a favorite garden and hothouse plant bearing small, salver-shaped flowers of delightful fragrance and bluish or pinkish-lilac color. The cultivated heliotrope is raised from cuttings, and is a plant that needs sunshine and warmth. From its flowers are made sachet powders and perfumes. Various wild species are natives of the warmer parts of the earth, but the familiar heliotrope of the gardens was found originally in Peru. There is a legend that the flower always faces the sun; hence the name, which is from two Greek words meaning *sun* and *turning*.

HELIOTROPE, or **BLOODSTONE**, a variety of quartz, partaking of the character of

Jasper or chalcedony. It is of a deep green color and is marked with blood-red spots. It is hard and is used for burnishing. The finely marked stones are used for seals, signet rings and other ornaments. Heliotrope is found in Tartary, Persia, Siberia, in the island of Rum, Scotland, and elsewhere in smaller quantities. According to Pliny, an ancient historian, there was a belief that if the stone were put into a basin of water in the sun, (*helios*), the light rays reflected from the surface of the water would be changed to red, hence the name. The stone rubbed with the juice of the heliotrope plant was superstitiously thought to render its wearer invisible.

HELIUM, a colorless gaseous element detected as early as 1868, but not regarded as having any practical value until 1918, when, after a long series of experiments, American chemists discovered a method of producing it in quantity. The important fact regarding helium is that it is noninflammable and can be used as a substitute for hydrogen in dirigible balloons. Had the Germans possessed the secret of its production during the World War their Zeppelins would have been vastly more destructive than they were, for the great balloons would have been uninjured by the shots that caused the hydrogen in their great gas bags to explode.

The new process of extraction is as follows: Natural gas is collected, compressed and cooled down in the same sort of apparatus as is used in liquefying air. As the process of cooling goes on the hydrocarbons liquefy first, then the nitrogen, and finally the helium, which is transformed at a temperature of 268° below zero (Centigrade). On an average, about one per cent of natural gas is helium, but in 1929 a flow of gas assaying 8 per cent was struck at Thatcher, Colorado. This and other extensive deposits of the gas in Texas, Kansas and Oklahoma make possible a quantity production of this valuable element, and practically assure to the United States a monopoly of it. The Government maintains a vast helium plant at Amarillo, Texas, where the gas is refined and whence it is conveyed in vast steel tank cars to Army and Navy flying fields. Improved methods have reduced the cost to less than one cent per cubic foot.

Helium is found in the air in the proportion of 1,000,000 volumes of air to four volumes of the element. It also occurs in

uraninite, fergusonite and other rare minerals, and in the gases from certain mineral springs. In 1903 a process of creating it from radium was discovered, which led to its production from the radio-active elements actinium and thorium. The atomic weight of helium (symbol He) is 3.99. It is almost twice as heavy as hydrogen, the lightest substance known, but liquid helium is lighter than any other known liquid.

HELL. In common usage the term *hell* signifies a place or condition of suffering of the wicked after death. Christian sects differ in their opinions as to the length and kind of punishment. Different ones declare that bodily torture is inflicted; that the fire in hell means only that the unrighteous are purified; that the suffering is eternal; that the suffering lasts only till the soul is purified. The Eastern and Western churches are at one as to the punishment of hell being partly "a pain of loss," that is, the consciousness of being debarred from the presence of God, and partly a "pain of sense," that is, real physical suffering. Originally the term signified *the covered, or invisible place*.

In the English Bible the word is used to translate the Hebrew *sheol* (*grave or pit*) and *Gehenna* (properly, the valley of Hinnom), as well as the Greek *Hades* (*the unseen*). In the Revised Version of the New Testament, however, *hell* is used only to translate *Gehenna*, *Hades* being left where it stands in the Greek.

HEL/LAS AND HELLENES, *hel'leenz*. See GREECE.

HELLEBORE, *hel'e boh'r*, a genus of perennial, low-growing plants belonging to the buttercup family, with leatherly leaves and yellowish, greenish or white flowers. Black hellebore, named from its black rootstock, yields a violent poison, but it has some medicinal value when used in small quantities, as it is an emetic and purgative. The Greeks were familiar with a species which they thought would drive away sadness and make the mind clear and bright. White hellebore is a very different plant, belonging to the lily family.

HEL/LESPONT. See DARDANELLES, THE.

HELL GATE, the name given to a pass in East River, between Long Island and Manhattan Island and between Long Island and Ward's Island. The pass is a portion of the strait which connects New York Bay with Long Island Sound. The reefs of rock in the

main passage formerly made the pass very dangerous, on account of the currents and eddies caused by the rising and falling tides. By extensive undermining and blasting these obstructions were removed by the government in 1885. A huge railroad bridge spans the channel. This is one of the heaviest bridges in the world, and was erected at a cost of \$25,000,000. Its approaches from each end exceed a mile in length.

HELMET, an article of armor to protect the head. It is a development of the open headdress of early times. Homer represents his heroes wearing bronze helmets with lofty crests. Helmets were common also among the Romans, but they did not have protection for the face. In the Middle Ages they were made of steel and provided with bars and flaps for protection in battle. They were made in various styles, some having a *beaver*, or movable piece, and some a *visor*, which could be lowered to protect the eyes but allowed the wearer to see through small slits. During the World War the steel helmet became a very important part of military equipment, and was worn by the soldiers of all the belligerent nations. This "war hat," as it was called, proved a valuable protective device in the trenches against machine-gun bullets.

HELMHOLTZ, *helm'hohlts*, HERMANN VON (1821-1894), one of the greatest physicists of the nineteenth century. He was born at Potsdam and educated at Berlin. In 1848 he became professor of anatomy at the Academy of Fine Arts, Berlin, and in the next year he obtained the chair of physiology at Königsberg, from which he was successively transferred to the same post at Bonn and at Heidelberg. In 1871 he was appointed professor of physics at Berlin, and through his efforts Berlin became the greatest center in the world for the study of physics through experiment. His work was chiefly in those departments of physics which are in closest relation with physiology—acoustics and optics. Of his many publications the best known are *The Conservation of Force*, *Manual of Optics*, *Popular Lectures on Scientific Subjects and Sensations of Tone as a Physiological Basis for the History of Music*.

HELOISE, *a lo eez'*. See ABELARD.

HELOTS, *hel'ots*, or *he'lots*, slaves in ancient Sparta. They were the property of the state, which alone had the disposal of their life and freedom and which assigned them to

certain citizens, by whom they were employed in private labors. Agriculture and all mechanical arts at Sparta were in their hands, and they were also obliged to bear arms for the state in case of necessity. They behaved with great bravery in the Peloponnesian War, and were rewarded with liberty (431 B. C.), but 2,000 appear to have been subsequently massacred. They rose against their masters several times, but were finally completely subjugated. After the downfall of Sparta they were freed by the Theban leader Epaminondas.

HELSINGFORS, FINLAND, in Finnish, HELSINKI, capital of the country and a seaport on the north shore of the Gulf of Finland, 190 miles nearly west of Petrograd. Seven fortified islands protect the city. It has manufactures of linen, beer, sugar, carpets and tobacco and an important trade in timber, corn and fish. It is beautifully situated on a broad peninsula and has one of the best harbors in the Baltic Sea. Helsingfors has many fine buildings, broad, attractive streets and good educational institutions. During the World War, after the revolutionary government of Russia gave Finland its freedom, Helsingfors was occupied by the Germans, but was subsequently evacuated by them (see FINLAND). Population, 1934, 268,600.

HELVETII, *hel vé'she i*, an ancient Celtic people who lived in the region now known as Switzerland. They were not much known to the Romans until the time of Julius Caesar, who, as governor of Gaul, prevented their intended emigration and after many bloody battles pressed them back within their frontiers. After their subjection by Caesar, several Roman colonies were established among them. On the death of Nero, the Helvetii, for refusing to acknowledge Vitellius as emperor, were mercilessly punished by Caecina, one of his generals, and thenceforth they almost disappeared as a people. Their successors to the land were the Alemanni.

HEMANS, *hem'anz*, FELICIA DOROTHEA (1793-1835), one of the most beloved English poets of her generation, was born in Liverpool. Her first volume, *Juvenile Poems*, published when she was fourteen, showed promise of the volume which was to follow—*The Forest Sanctuary*, containing *Hymns for Childhood*, *National Lyrics*, *Songs for Music* and *Scenes and Hymns of*

Life. Many of Mrs. Hemans' shorter poems, including *The Treasures of the Deep*, *The Better Land*, *The Voice of Spring* and *The Homes of England*, have become standard English lyrics.

HEMATITE, the ore from which most of the world's iron is obtained. The name, which means bloodlike, was given it because of its brownish red color. Hematite is found in almost all rock formation, even in loose earth. From the softer hematite the pigment red ochre is made. See IRON.

HEMIPTERA, *hem'p'ter ah*, a large class of insects, which includes those usually called bugs. They include the species most destructive to crops and most loathsome to humanity. Lice, bedbugs, chinch bugs and scale insects are all members of the class Hemiptera. The young do not resemble the parents very closely, but the life circle (see METAMORPHOSIS) is incomplete. The mouths of all these insects are adapted for sucking, and they live upon the blood of animals or the juices of plants. See INSECTS.

HEMISPHERE, *hem'is feer*, half a sphere, especially one of the halves into which the earth may be supposed to be divided. It is common to speak of the Eastern Hemisphere and the Western Hemisphere, the former, also called the Old World, comprising Europe, Asia, Africa and Australia, with their adjoining waters and islands; the latter including North America and South America. The boundary between the two is quite arbitrary; a more natural division of the earth is into the Northern and the Southern hemispheres, the equator forming the dividing line. Some geographers also divide the earth into land and water hemispheres.

HEMLOCK, a poisonous biennial of the parsley family, which bears a shining, hollow stem, usually marked with purplish spots. The leaves are much divided and when bruised give a nauseous odor. The flowers are small white clusters in large umbels. Hemlock grows in Great Britain and throughout Europe and in temperate Asia; it has long been known because of its medicinal and poisonous properties. It is supposed that the poison given to Socrates was a decoction of this plant, though it may have been the water hemlock which was used in this case. The hemlock grows in ditches and other moist places, reaching a height of from two to six feet. It now grows in many places in North America.

HEMLOCK, or **HEMLOCK SPRUCE**, a large, graceful tree, not unlike some of the spruces in appearance. The leaves, which



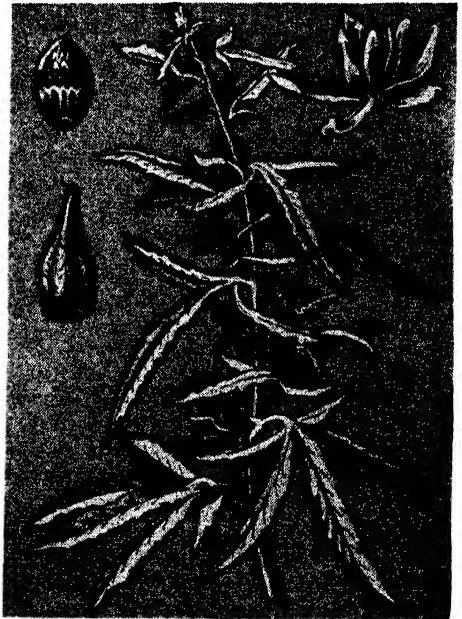
HEMLOCK SPRUCE

are not more than half an inch long, are bright green above and silvery white below. They are not set so closely on the branches as are those of the spruces, and consequently, they give a more graceful appearance to the twigs and branches. The cones are small and open. The wood of the hemlock is not especially valuable, but the bark, dark-colored, hard, rough and less than two inches thick, is used in large quantities by tanneries, as it contains much tannin. In recent years the depletion of the pine forests has led to a greater use of hemlock lumber. The trees grow in forests throughout the Northern United States and Canada, in moist soil. Only four species are native to North America; two are near the Atlantic coast and two near the Pacific.

HEMORRHAGE, *hem'o raje*, a discharge of blood from the veins or arteries. Bleeding from the veins is called *venous hemorrhage*, and that from the arteries *arterial hemorrhage*. In case of a severe cut one may know

whether an artery or a vein is bleeding by the appearance of the blood. That from an artery comes in spurts; that from a vein has a steady flow and is dark colored. If the blood issues in jets, deep pressure should be made on the flesh between the wound and the heart, but if the vein is bleeding the pressure should be on the other side of the wound (see **TOURNIQUET**). Bleeding from the lungs is a symptom of tuberculosis, and should have the immediate attention of a physician.

HEMP, a plant belonging to the nettle family, extensively cultivated for the fibers found in its stalk, and for its seeds. The plant has a coarse, rough stem, which grows to a height of from four to twenty feet. The



HEMP

Showing seed, seed vessel and flower.

leaves are large and are composed of narrow, toothed leaflets, each from three to five inches long. The stamens are borne on one plant, in large clusters of flowers near the top. The pistils, which are inconspicuous, are borne on another plant. The fibers are long, soft and strong. They can be bleached as white as linen and woven into coarse fabrics, such as toweling and sheeting, carpets and rugs; but a large proportion of the fiber is employed in the manufacture of ropes and

cordage. Hemp seeds are used as bird food and are also the source of an oil used in cooking and in making varnishes.

Hemp is cultivated in much the same way as flax. The ground is carefully plowed and harrowed, and the seed is sown broadcast, from one to three bushels to the acre being used. The soil is lightly but evenly covered, to assure plants of a uniform size. In Kentucky the most important hemp state of the Union, seed is sown usually in April, and the first crop is cut about three months later. The fibers are freed from the woody part of the stalk by a process called *retting*. This consists in soaking the stalks in water or exposing them to the weather, the latter called *dew retting*. The dew method is commonly employed by American hemp growers. After the retting is completed the stalks are crushed and beaten until the fibers are freed from the stems, a process called *breaking*. The fibers are then tied into bales and placed on the market.

Hemp is native to the warm regions of Asia, and is raised in Japan, China and Manchukuo. It is widely produced in Central and Southern Europe. In the United States, Wisconsin, Ohio and Kentucky are the leading hemp states. It is also raised in California, Michigan, Minnesota and South Dakota. Manila hemp is an important fiber plant of the Philippines; this is a species of plantain (which see).

HEMP, INDIAN. See HASHISH.

HENDERSON, ARTHUR (1863-1935), British Labour statesman. He was born in Glasgow, Scotland, and in his early manhood was a molder by trade, but soon became prominent in the Labour movement. He was mayor of Newcastle beginning in 1903 and also was chosen magistrate of the county. He was soon elected Labourite member of the house of commons for Barnard Castle. He was twice elected chairman of the Labour party.

He joined with many other Labour leaders in supporting the war; and went on a special mission to Russia in 1917. He was Home Secretary in 1924, and Foreign Secretary in the second Labour Ministry of Premier Ramsay MacDonald, 1929 to 1931. In recognition of his outstanding efforts in the cause of peace, as President of the International Disarmament Conference at Geneva, he was awarded the Nobel Peace Prize in 1934.

HENDRICKS, THOMAS ANDREWS (1819-1885), an American statesman and Vice-President of the United States, was born near Zanesville, Ohio. He was taken in infancy to Indiana, where he was graduated at Hanover College, and was later admitted to the bar. He served in the legislature, and was in Congress from 1851 to 1855. He was elected to the United States Senate in 1863, and was pronounced in his support of the Union. In 1868 he was a candidate for the Democratic nomination for President; in 1872, Greeley having died, many electoral votes were given to Hendricks. In the same year he was elected governor of Indiana. In 1876 he was the unsuccessful nominee of the Democratic party for the Vice-Presidency, was again a candidate in 1884, Cleveland being the candidate for President, and this time was elected. He died while holding the office.

HEN HAWK, or CHICKEN HAWK, a name given to a number of different species of hawks, who either attack poultry or are supposed to do so. In some instances, for example, in the common marsh hawk, the name is very unjustly applied. The *red-tailed hawk* captures small poultry and birds, but they form a small part of this bird's food. Gophers, mice, frogs and many injurious small animals which are eaten by this hawk render it probably on the whole beneficial. The *red-shouldered hawk* never attacks poultry, although often accused of doing so. It preys upon mice and other injurious animals and is really a good friend of the farmers. Some of the smaller hawks are called chicken hawks, and though they doubtless occasionally do some damage, yet they do not altogether deserve the enmity of poultry raisers. See HAWK.

HEN'NA, a shrub, native to Northern Africa, Arabia and the East Indies, from which dyes are made. The coloring-matter is in the leaves, which when dried, powdered and made into a paste with hot water and catechu produce a rich orange stain, much used by women on their nails and finger tips, and to a limited extent in many countries as a red hair-dye; it is also used for dyeing skins, furs and leather. Mixed with indigo it produces a black dye, used by a few men to dye their beards and for blacking the manes and hoofs of horses.

HEN'NEPIN, LOUIS (about 1640-1706), a Belgian missionary and explorer in Amer-

ica. After preaching in France he set out, in 1675, with LaSalle to take the gospel to the American Indians. He preached first at Fort Frontenac, and then accompanied LaSalle on an exploring expedition. By way of lakes Erie, Huron and Michigan the party made its way to the Saint Joseph River, thence down the Kankakee to the Illinois River. They built Fort Crevecoeur near the site of Peoria, and Hennepin then started southward. He was captured by the Sioux, but escaped, and returned to France. When the Church again ordered him to America he fled to Holland. After the death of LaSalle he made extravagant claims of discovery and exploration, all of which have been proved false.

HENRY, O. See PORTER, WILLIAM SIDNEY.

HENRY I (1068-1135), king of England, the youngest son of William the Conqueror. He was hunting with William Rufus when that prince was killed, in 1100, and instantly riding to London, he caused himself to be proclaimed king in the absence of his elder brother Robert, duke of Normandy. He re-established by charter the laws of Edward the Confessor and married Matilda, daughter of Malcolm III of Scotland, thus conciliating the Scots. Robert landed with an army to oppose his brother's seizure of the throne, but was pacified with a pension and the promise of succession in event of his brother's death. Soon after, however, Henry invaded Normandy, took Robert prisoner and reduced the duchy. He was successful also in a struggle with France. Henry appointed as his heir his daughter Matilda, or Maud, whom he had married first to the emperor Henry V and then to Geoffrey Plantagenet of Anjou. See HENRY II.

HENRY II (1133-1189), king of England, the first of the Plantagenet line, the son of Geoffrey, count of Anjou, and Matilda, daughter of Henry I. He succeeded Stephen. The opening of his reign was marked by the reduction of the power of the nobles and the reorganization of the financial system. The most important events of his reign were the submission of the Church to the temporal authority of the Crown, through the Constitutions of Clarendon; the famous struggle with and murder of Thomas à Becket, resulting in the restoration of some ecclesiastical rights; the conquest of Ireland; the first subjugation of Scotland by England, and the division of England into judicial districts.

Henry ranked among the greatest of English kings, his chief services to his people being the revival of trial by jury, the construction of roads and the destruction of castles of lawless barons. Henry's sons greatly disturbed the latter part of his reign with insurrections; these were a continual menace to the country's welfare.

HENRY III (1207-1272), king of England, son of John, whom he succeeded in 1216. As Henry approached manhood he displayed a character wholly unfit for his station and a weakness which proved the opportunity of the great barons of the country. These, under Simon de Montfort, revolted and succeeded in forcing Henry, by the Provisions of Oxford, to resign the chief power to a committee of barons. In later years, Edward, son of the king, defeated the barons and freed his father from his early humiliating promises. Parliament, in its modern sense of two houses, was first called during this reign.

HENRY IV (1367-1413), king of England, first king of the House of Lancaster, the eldest son of John of Gaunt, fourth son of Edward III. He ascended the throne in 1399 on the abdication of Richard II. The first six years of his reign were filled with a series of insurrections, which were finally quelled, and the rest of the period was comparatively untroubled. The first persecutions of the Lollards occurred during his reign. See LANCASTER, HOUSE OF.

HENRY V (1387-1422), king of England. On succeeding his father, Henry IV, in 1413, he showed a wisdom in marked contrast to a somewhat recklessly-spent youth. The struggle in France between the factions of the dukes of Orleans and Burgundy afforded Henry a tempting opportunity for reviving the claims of his predecessors to the French crown. He accordingly landed near Harfleur in August, 1415, and though its capture cost him more than half his army, he decided to return to England by way of Calais. A large French army endeavored to intercept him at the plain of Agincourt, but was completely routed (October, 1415). He returned in triumph to England, but on the defeat of his brother, the Duke of Clarence, in Normandy, he again set out for France, drove back the army of the dauphin and entered Paris, forcing Charles VI to accept him as his successor to the French crown. A son was at this time born to him, and all his

great projects looking far into the future seemed about to be realized, when he died of fever. See HENRY VI.

HENRY VI (1421-1471), king of England, became king on the death of his father, Henry V, in 1422. As he was an infant, his uncle John, Duke of Bedford, was appointed regent of France; and his uncle Humphrey, Duke of Gloucester, was made protector of England. A few weeks after Henry's succession Charles VI of France died, and in accordance with the Treaty of Troyes, Henry was proclaimed king of France. The war which followed proved at first favorable to the English, but in the end, through the heroism of Joan of Arc (which see) the death of the Duke of Bedford and the defection of the Duke of Burgundy, it resulted in the loss to the English of all their possessions in France, except Calais.

In April, 1445, Henry married Margaret of Anjou, daughter of René of Provence, and the marriage was unpopular in England. Other causes increased this unpopularity, and various risings ensued, which led in 1455 to the opening of the Wars of the Roses (see ROSES, WARS OF THE). During the struggle Henry was several times taken prisoner by the Yorkists, and in 1471 he was found dead in the Tower, murdered, according to popular belief, by order of Edward IV. Henry was a gentle, pious, well-intentioned, hopelessly incompetent king.

HENRY VII (1456-1509), king of England, first sovereign of the House of Tudor (see TUDOR, HOUSE OF). He was proclaimed king in 1485, after the defeat and death of Richard III at Bosworth. His reign was troubled by repeated insurrections. In the main, however, the period was beneficial to England. Its freedom from wars permitted the development of the internal resources of the country, and Henry's policy of curbing the power of the feudal nobility was highly beneficial.

HENRY VIII (1491-1547), king of England, the second ruler of the Tudor line, and the sovereign in whose reign the Church of England was separated from the Church of Rome. He was the son of Henry VII, whom he succeeded in 1509.

After the election of Charles V as German emperor, both Charles and the French king, Francis I, sought the alliance of England. A friendly meeting took place between Henry and Francis at the "Field of the Cloth of

Gold" in France (1520), so-called from the splendor of the settings and the magnificence of the attendant festivities. The treaty that was arranged by the kings' ministers brought only empty honor to England, and the extravagance of the display was a heavy drain on the national finances.

During the earlier years of Henry's reign, affairs of state were chiefly in the hands of Thomas Wolsey, a resourceful and ambitious statesman who rose from the position of tutor to a succession of honors, becoming Lord Chancellor, Archbishop of Canterbury, cardinal and Papal legate. When, in 1527, Henry began casting about to find a way to divorce his wife, Catharine of Aragon, Wolsey was expected to use his influence with the Pope in securing the separation. Henry had tired of Catharine, who was older than he, had borne no living male heir, and had originally been the wife of his elder brother, Arthur. The last of these pretexts was the alleged ground for seeking divorce, but the real motive was the king's desire to marry Anne Boleyn, one of Catharine's maids of honor. Wolsey's efforts were unavailing. After his downfall, Henry followed the advice of Thomas Cranmer, afterward Archbishop of Canterbury, to refer the case to the universities. From them he soon got the decision he wanted.

In 1533 his marriage with Catharine was declared null, and a previous private marriage with Anne Boleyn was declared lawful. As these decisions were not recognized by the Pope, two acts of Parliament were obtained, one in 1534 setting aside the authority of the chief



HENRY VIII

pontiff in England, the other in 1535, declaring Henry the supreme head of the Church. Henry suppressed the monasteries by act of Parliament, and thereby inflicted an incurable wound upon the Catholic religion in England. It was far from being his intention, however, to advance the cause of Protestantism, and he insisted on firm adherence to the doctrines of the Roman Catholic Church.

In 1536 Anne was beheaded for alleged unfaithfulness. Henry then married Jane Seymour, and the birth of Prince Edward, in 1537, fulfilled his wish for a male heir. The death of the queen was followed by Henry's marriage with Anne of Cleves, the negotiations for which were conducted by Cromwell. The king's dislike for his wife, which resulted in another divorce, was extended to the minister who had proposed the union, and Cromwell's disgrace and death soon followed. A marriage with Catharine Howard proved no happier, and she was executed on a charge of infidelity. In 1543 Henry married his sixth wife, Catharine Parr, a lady secretly inclined to the Reformation, who survived the king. In the meantime Scotland and France had renewed their alliance, and England became again involved in war. James V ravaged the borders, but was defeated at Solway Moss in 1542, and in 1544 Boulogne was captured, Henry having again allied himself with Charles V. Charles, however, soon withdrew, and Henry maintained the war alone until 1546. He died in 1547 and was succeeded by his son, Edward VI. See CATHARINE OF ARAGON; BOLEYN, ANNE.

HENRY III (1551-1589), king of France, third son of Henry II and Catharine de' Medici, came to the throne on the death of his brother, Charles IX, in 1574. The war against the Huguenots (which see), which had been begun in the previous reign, continued under Henry III, who was at length forced to grant to the Protestant party certain concessions. This led to the formation of a Catholic League, in response to whose demand Henry repealed the special privileges of the Huguenots, thus bringing on another war. The Huguenots, under Henry of Navarre, were successful, and to their camp Henry III fled, after he had made himself unpopular with the Catholic party by his murder of the duke of Guise and the cardinal of Lorraine, the Catholic leaders. In 1589 Henry III was murdered, and Henry of Navarre came to the throne as Henry IV.

HENRY IV (1553-1610), king of France, better known as HENRY OF NAVARRE, the son of Anthony of Bourbon, duke of Vendôme, and of Jeanne d'Albret, queen of Navarre. He was one of the greatest characters in French history. Educated by his mother in the Calvinistic faith, he joined, at her wish, the Protestant army of France and served

under Admiral Coligny, the great French soldier who succeeded Condé as commander of the Huguenots. In 1572, on the death of his mother, Henry became king of the small, independent kingdom of Navarre, north of the Pyrenees. The same year he married Margaret of Valois, sister of Charles IX and daughter of Catherine de' Medici. This unscrupulous queen-mother was jealous of Coligny's influence over her son, and plotted the Massacre of Saint Bartholomew's Day. The massacre was timed to occur during the wedding festivities of Henry and Margaret, which were attended by the most prominent Huguenot leaders. Coligny lost his life, but Henry escaped by renouncing Protestantism, though he was virtually a prisoner at court for four years. In 1576 he escaped from Paris, retracted his enforced statement of Catholicism, put himself at the head of the Huguenots and took a leading part in the subsequent religious wars. On becoming presumptive heir to the crown, through the death of the brother of Henry III, he was obliged to resort to arms to assert his claims. In 1587, he defeated the army of the League at Coutras, and after the death of Henry III in 1589, he gained the battles of Arques and Ivry. He was obliged, however, to raise the siege of Paris; and convinced that a peaceful occupation of the throne was impossible without a profession of Catholic faith, he became nominally a Catholic in 1593.

After his formal coronation in 1594 only three provinces held out against him—Burgundy, reduced by the victory of Fontaine-Française in 1595; Picardy, reduced by the capture of Amiens in 1596, and Brittany, which came into his hands in the spring of 1598. The war against Spain was concluded in 1598 by the Peace of Vervins, to the advantage of France. The same year was signalized by the granting of the Edict of Nantes, which secured to the Protestants religious liberty. Henry made use of the tranquillity which followed to restore the internal prosperity of his kingdom, and particularly the wasted finances, at the instance of his Prime Minister, Sully.

Henry divorced Margaret of Valois, and in 1600 he married Maria de' Medici, niece of the grand duke of Tuscany, mother of Louis XIII. She was crowned in 1610, but on the day following her coronation, Henry was stabbed by a fanatic, while examining the preparations for the queen's entry into Paris.

The great benefits which Henry IV bestowed upon France entitled him to the designation which he himself assumed—the Regenerator of France.

HENRY III (1017-1056), Holy Roman emperor, became king of Germany on the death of his father in 1039 and succeeded to the imperial dignity in 1046. He strengthened his power by forcing Hungary, Bohemia and Apulia to render him homage, and in 1046 he deposed the Pope and appointed a new one. From this time to the end of his reign his influence was strong in all Church matters. He was one of the most powerful of the early emperors.

HENRY IV (1050-1106), Holy Roman emperor, came to the throne on the death of his father, Henry III, in 1056. After some years of regency, Henry assumed the rule and found that much of the power in the kingdom had been usurped by the nobility and the Church. A formidable revolt of the Saxons was put down in 1073, and Henry was able to give his attention to a struggle with the Pope. The two came into conflict owing to a decree promulgated in 1075 forbidding civil rulers to appoint to any ecclesiastic office, a decree which Henry refused to obey. The result was that Henry called a council and deposed the Pope, and was in turn excommunicated. The Pope released Henry's subjects from their allegiance, and this forced Henry to the point of making peace with the Pope after most humiliating concessions. In 1080 the Pope again excommunicated Henry, who laid siege to Rome and appointed an anti-pope. A short time afterward he was driven out of Italy. In 1105 he was compelled by his nobles to abdicate.

HENRY VI (1165-1197), Holy Roman emperor, son of Frederick Barbarossa (see **FREDERICK I.**) He served as regent while his father was in the Holy Land, and in 1190 succeeded to the crown on his father's death. Through his wife he laid claim to the throne of Sicily, and this involved him during much of his reign in wars in Italy. When Richard I of England was captured, on his return from the Holy Land, it was to Henry that he was handed over for safe keeping. Among the early emperors of Germany Henry ranks as one of the strongest.

HENRY, PATRICK (1736-1799), an orator and patriot, one of the greatest Americans of the Revolutionary period, was born in

Virginia. He received a brief classical education, but at an early age entered business and married at eighteen. Having failed in storekeeping and in farming, he became a lawyer in 1760, and three years later, when employed to plead the cause of the people against an unpopular royal enactment, his great eloquence placed him at once in the front rank of American orators. His bold and unfaltering opposition to the Stamp Act and the policy which it expressed, during which he uttered the famous words, "Give me liberty or give me death," led to his election as delegate to the First Continental Congress. He delivered the first speech in that assembly, and it was worthy of so momentous a meeting. In 1776 he carried the vote of the Virginia convention for independence; in the same year he became governor of the new state, and was four times reëlected. In 1791 he retired from public life and in 1795 declined the office of Secretary of State, offered him by Washington. Henry was rather eloquent than deep; no one who has come after him has been able to stir and sway the passions of an audience as easily as he; yet he was not a statesman of the most intellectual type. He was peculiarly free of personal ambition.

HENRY THE NAVIGATOR (1394-1460), a Portuguese prince, celebrated as a patron of explorers. He was the third son of King John the Great. In 1418 he established a school of navigation and an observatory at Sagres, and induced the best mathematicians and astronomers of Europe to become his associates. From this center of maritime learning Prince Henry sent out his daring and well-trained mariners. It was his belief that by sailing around Africa, ships could reach India by an all-sea route. In the effort to circumnavigate the continent, his navigators explored and mapped portions of the western shore, and discovered the Azores, the Canaries and the Madeira Islands. In 1434 one of the mariners doubled Cape Bojador, and other adventurers, pushing farther south, discovered Cape Blanco and Cape Verde. A profitable commerce with the natives of West Africa soon developed, and Senegal and Gambia were partially explored. An unforeseen result of this activity was the establishment of the negro slave trade. Prince Henry paved the way for the opening of the direct route to India, and gave new impetus to commerce and discovery.

HENSCHEL, *hen'shel*, SIR GEORGE, (1850-1934), a composer and singer, the first conductor of the Boston Symphony Orchestra. From Breslau, his native city, where he made his first public appearance as a pianist at the age of twelve, he went to Leipzig and later to Berlin, where after several years of study he gained recognition as a baritone singer. In 1877 he went to London and there became a prominent teacher of voice. There he met, and afterwards married, an American soprano, Miss Lillian Bailey. Subsequently the two appeared together frequently in concerts both in America and in England, in both of which countries Henschel acquired a high reputation as director and composer.

HENTY, GEORGE ALFRED (1832-1902), a writer of juvenile fiction, a great favorite with boy readers. He received his education at Cambridge and engaged in newspaper correspondence for the *London Standard* during the Austro-Italian and the Franco-German wars. Among his best known works are *Under Drake's Flag*, *The Lion of the North*, *By Pike and Dyke*, *With Lee in Virginia* and *In Freedom's Cause*. These books are full of action, and are extremely interesting narratives with a historical background. The Henty stories have a wholesome tone and are far superior to books of the Horatio Alger type.

HEPATICA, *he pat'i ka*, a beautiful little flower that blossoms in earliest spring. The hairy stalks rise from the midst of the leathery, dark-colored, three-lobed leaves, that have lain on the ground during the winter. The flowers, which resemble the buttercups, vary in color from white to red and purple. The hepatica is sometimes known as the liverleaf or liverwort.

HEPTARCHY, *hep'tahr ki*, any group of seven governments. Specifically the term is applied to the seven kingdoms into which England was divided in Anglo-Saxon times. The kingdoms were founded at different times, and at no one time were they all independent monarchies. In 827 King Egbert of Wessex united all the kingdoms into one and assumed the title of king of England.

HERA. See **JUNO**.

HER'ALDRY. During the Crusades, when thousands of knights clad in armor fought for the possession of the Holy Land, it was the custom of the warrior to emblazon on his shield some device, called his coat of

arms, which made known his identity. As knights from all over Europe took part in the Crusades, they took this means of telling each other who they were. The symbols used varied widely, and included representations of birds, animals, plants, stars and many other things.

At first there was much confusion, as many knights from different countries chose the same device, which were emblazoned on the shield or embroidered on a coat worn over the armor, and there was no way of distinguishing between those whose emblems were alike. To overcome this difficulty, officers called *heralds* were appointed to systematize the selection of emblems, and in this way the science of heraldry originated.

Knights in armor with coats of arms on their shields no longer ride to battle, but the devices used in the medieval period have been carefully preserved, and many European households include the family coat of arms among their choicest possessions. In England an organization known as the *Heralds' College* supervises the adoption of new coats of arms and the assumption of those borne by ancestors.

HERBA'RIMUM, a collection of dried plants, arranged according to a recognized system of classification. The plants are usually mounted on sheets of white paper, and a good specimen shows the root, leaf, flower and fruit. The United States national herbarium, which is in the National Museum; the herbarium of the New York Botanical Garden, and the Gray Herbarium, in Harvard University, are the largest collections in the United States. The herbarium of the *Jardin des Plantes*, Paris, is noted for its large collection of type specimens.

HERBART, *her'bahrt*, JOHANN FRIEDRICH (1776-1841), an eminent German philosopher, the founder of modern pedagogy. His educational principles were based directly upon his philosophy, and his teachings have exerted an epoch-making influence upon education in Europe and America. Herbart strongly emphasized the fact that all subjects are related, and that knowledge of one strengthens knowledge of all the others. He was the originator of the doctrine of apperception; that is, the interpreting of new knowledge by that already in the mind. He believed that the end and aim of education is the development of the individual, whose claims he places above those of family or

state. He laid great stress upon the place of interest in education, believing that only as interest is stimulated and aroused by making subjects vital can the child be taught to the best advantage.

The seminary for teachers which Herbert founded at Königsberg attracted educators from all over Europe and from the United States. Although this institution was compelled to close in 1833 because of the hostility of the Prussian government, its doctrines continued to be taught by its students in various parts of the world, and it may be truly said that in the Königsberg Seminary the "New Education" had its birth.

The facts of Herbert's life are few. He was born at Oldenburg and studied at the University of Jena, where he was a pupil of the philosopher Fichte. He was an ardent follower of Fichte for a time, but later repudiated him. He taught in the University of Göttingen and at Königsberg. Among his works which have been translated into English are *General Pedagogy*, *Introduction to Philosophy*, *Application of Psychology to the Science of Education* and *A B C of Sense Perception*.

HERBERT, VICTOR (1859-1924), a composer of light operas and musical comedies, in which are found many of the best-loved melodies played and sung to-day. Years after his death, his operettas continue to delight patrons of the stage, moving pictures and radio. Herbert was born in Dublin, Ireland, the grandson of Samuel Lover, the novelist. At the age of seven he began the study of music in Germany and eventually became an accomplished performer on the violoncello. He was first 'cellist of the court orchestra at Stuttgart, and in 1886 accepted a similar position offered by the Metropolitan Orchestra of New York. Subsequently he played with the famous Theodore Thomas Orchestra of Chicago. Herbert was chosen successor of Patrick S. Gilmore as leader of the Twenty-second Regiment Band in 1893, and from 1898 to 1904 he conducted the Pittsburgh Symphony Orchestra. Besides light operas, he composed songs and instrumental compositions, the music for some of the Ziegfeld *Follies* and the dramatic score for the photoplay, *Birth of a Nation*. Herbert's operas and musical comedies include *The Ameer*, *The Fortune Teller*, *Babes in Toyland*, *Mlle. Modiste*, *The Red Mill*, *Sweethearts*, *It Happened in Nordland*, *The Madcap Duchess*,

Princess Pat, and *Naughty Marietta*; and in addition, the serious opera *Natoma*, a grand opera with an American background. He also wrote two symphonies.

HERBIOIDES, *hur'bi sides*, preparations for destroying weeds. Among the herbicides most commonly used, and apparently with greatest success, are solutions of carbolic acid, copper sulphate, arsenic, sal soda, kerosene and salt. The amount of the preparation to be used depends upon the conditions and habits of growth of the weeds. Recent bulletins of the Department of Agriculture at Washington give full information as to the best methods of eradicating weeds. See **WEEDS**.

HERBIVOROUS ANIMALS, an old classification in zoölogy referring to those animals which are not carnivorous (flesh-eating), but which graze. It is no longer recognized. See **ZOOLOGY**.

HERBS, *urbs* or *hurbz*, plants that contain no woody tissue, and usually die down to the ground at the end of their growing season. Many of them are used in the preparation of foods and medicines, and most of the spices are obtained from herbs. Among the best known herbs are parsley, sage, thyme and caraway.

Nearly all the herbs valuable for the table for seasoning can be raised in the garden from seed; some of them, as mint and parsley, can be supplied to a family from a windowbox "garden," if the box is supplied with good soil and kept on the sunny side of the house.

Related Articles. Consult the following titles for additional information:

Anise	Hop	Rosemary
Balm	Horehound	Sage
Caraway	Hyssop	Sorrel
Catnip	Lavender	Tansy
Cicely	Mint	Thyme
Coriander	Pennyroyal	Wintergreen
Fennel	Parsley	Wormwood

HERCULANEUM, an ancient city, about five miles southeast of Naples, at the base of Mount Vesuvius. It was completely buried, with Pompeii, Stabiae and other villages, by lava and ashes during an eruption of Vesuvius in the reign of the Roman emperor Titus, A. D. 79. The site had been long sought in vain, when, early in the eighteenth century, well-diggers found statues at the village of Portici. In 1738 the digging went deeper, and traces of the theater of Herculaneum were found. Explorations have disclosed wonderful examples of ancient art, far exceeding those found at Pompeii.



Farnese Hercules

HERCULES, *hur'ku leez*, the most celebrated of the Greek heroes of mythology, famed for his great strength and daring. He was the son of Jupiter by Alcmena, a mortal princess, and was brought up at Thebes at the court of his stepfather. Juno, hating him because of Jupiter's love for his mother, troubled him throughout his career with all the disasters she could invent. When he was but an infant she sent two gigantic serpents to devour him, but the child, stretching out his hands, grasped them by the neck and strangled them both. When he grew to manhood he married and settled down to a happy life. Juno, however, determined that he should know no peace and afflicted him with madness, so that he killed his wife and three children and wandered forth as an outcast. As a purification for his crime he was condemned to serve his cousin Eurystheus and to perform any tasks which might be laid upon him. The tasks which he accomplished were what are known as the Twelve Labors of Hercules. They were as follows:

(1) to kill a lion which ravaged Nemea; (2) to destroy the hydra (see Hydra); (3) to capture alive and unhurt a stag, famous for its incredible swiftness, its golden horns and brazen feet. (4) to capture alive a furlous wild boar; (5) to clean the stables of Augeas (see Augeas); (6) to kill the savage birds which troubled the country near Lake Stymphalus and ate human flesh; (7) to bring alive to Eurystheus a prodigious wild bull which laid waste the island of Crete; (8) to obtain the mares of Diomedes (see Diomedes); (9) to procure for the daughter of Eurystheus the girdle which had been given by Mars to the queen of the Amazons; (10) to kill the monster Geryon and bring to Eurystheus his numerous flocks; (11) to obtain three golden apples from the garden of the Hesperides (see Hesperides); (12) most dangerous of all, to bring up from Hades Pluto's dog, Cerberus.

All of these tasks he performed, besides many others which he met with while on his enforced journeys.

After his release from Eurystheus he came into conflict with Apollo and was by him condemned to serve as a slave to Omphale, queen of Lydia. The occupations of Hercu-

les during this period were exceedingly effeminate. In female garb he worked at spinning, while his mistress clad herself in his



HERCULES AND THE NEMEAN LION

lion's skin and brandished his famous club. Released from the Lydian queen, he again set out in search of adventures; having married Deianira, he was now no longer alone in his wanderings. One day Hercules and Deianira came to a rapid stream. The centaur Nessus offered to carry Deianira across, but when he reached the opposite shore, instead of setting her down he galloped off with her. Hercules therefore shot him with one of his poisoned arrows and Nessus, with his dying breath, bade Deianira to dip in his blood a robe of Hercules, which should serve if ever his love wandered from her, to bring him back. When sometime later she became jealous of Iole, she innocently sent Hercules the robe. Its effect, however, was most agonizing, and all attempts of Hercules to tear it off were in vain. As the only way of stopping the pain, he had a huge funeral pile built, on which he laid himself. This was set on fire, but while the mortal part of the hero was consumed, Jupiter took the immortal part to Olympus, and there Hercules lived with the gods as the husband of Hebe.

HERCULES, PILARS OF, the ancient name for the rocks projecting into the sea on either side of the Strait of Gibraltar at its narrowest point. See GIBRALTAR.

HERCULES BEETLE, a large beetle, about five inches in length, found in tropical America. Its great peculiarity consists in

the exceedingly long, curving horn which projects from the upper part of the head of the male, and the shorter one from the lower part of the head, which curves upward to meet it. The smaller female is hornless.

HEREDITY, the transmission from parent to offspring of physical and intellectual characteristics. The term is used in a very broad sense and applies to both plants and animals, though the greatest interest is attached, naturally, to heredity in human beings. Darwin, Spencer and Wallace have studied the subject thoroughly and embodied their discoveries in doctrines which, though at first received with skepticism, are now generally believed. It is known that heredity manifests itself in different ways. For instance, the qualities of the parents may blend in the children; they may alternate in the children; the qualities of one parent only may be transmitted to a child, or the inherited qualities may come from an ancestor—not the immediate parent. Both mental and physical characteristics are transmitted, but they do not necessarily manifest themselves in infancy; in fact, many hereditary traits come only with increasing age. To how great an extent an individual is governed by hereditary traits is still a question of discussion among scientists. See **EUGENICS**.

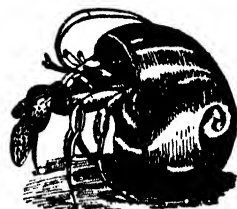
HERETIC, one who holds some theological doctrine that conflicts with the beliefs of the church to which he belongs, but who, at the same time, calls himself a Christian. Many of the early Christians preserved their Jewish or Greek philosophical notions and mingled them with the doctrines of Christianity. Among sects called heretics in later times by the Roman Catholic Church were the Waldenses, the Wycliffites, the Hussites, the Lutherans and all Protestant sects and churches. Before Christianity was made the religion of the Roman state, nothing but excommunication was inflicted upon the heretic; but severe laws were passed soon after the conversion of the emperors. The code of Justinian contains many ordinances against heretics, and the canon law made it a duty to denounce them under pain of excommunication. Persecution of heretics was common during the Middle Ages, and extended into the modern period, but is now generally replaced by religious toleration.

HERGESHEIMER, JOSEPH (1880–), an American writer of fiction, was born in Philadelphia and educated there in the

Academy of Fine Arts. He has published more than twenty volumes of stories and a few books on serious subjects, and has been very successful as a short-story writer. Among his most popular works are *Mountain Blood*, *Gold and Iron*, *Java Head*, *The Happy End*, *Steel*, *The Bright Shawl*, *Tampico*, *Quiet Cities*, *Swords and Roses*, *The Party Dress*, *The Limestone Tree*, *Sheridan*, *Berlin*, *The Tropical Winter*, and *The Presbyterian Child*.

HERMES, hur'meez. See **MERCURY**.

HERMIT CRAB, a shrimp-shaped crab with no shell covering on its tail, which makes its home in the cast-off shells of other animals. Sometimes it drags out the occupant of a suitable shell and after eating it takes possession of its habitation. The crab attaches itself firmly to the shell by means of a hooklike appendage and carries its stolen home about wherever it goes. It is impossible to draw it out without tearing its body. As the crab increases in size it seeks a larger shell.



HERMIT CRAB

HERMITS are those who in early ages withdrew from association with man and took up their abode in caverns or poorly made huts, in order to avoid the cares, temptations and business of the world. They often lived in complete solitude. The first hermit is said to have been Paul of the Thebaid, who fled to the desert after persecution by Decius and lived alone for ninety years, till his death, about 342. The hermits of the early church lived in a community, but each had a separate hermitage, and they met only for religious exercises.

HERNE, JAMES A. (1840–1901), an American actor and author, born in Troy, N. Y. He made his stage debut at the age of nineteen, in his native city, in *Uncle Tom's Cabin*. His first original play was *Hearts of Oak*, which appeared in 1878. His greatest success was *Shore Acres*, as produced at the Boston Museum in 1892. It achieved instant popularity and brought its author fame.

HERNIA, hur'ne ah, or **RUPTURE**, a tumor, formed by the protrusion of parts of any organ by a natural or accidental opening from the cavity in which it is contained. The brain, the heart, the lungs and most of

the abdominal viscera may become totally or partially displaced and thus give rise to the formation of hernial tumors. The term is ordinarily applied to abdominal hernia, which may arise from violent strain, as in jumping or lifting. Various forms of abdominal hernia are recognized, and each has its peculiar method of treatment. The wearing of a truss or support to hold the organ in its natural position is a common and safe remedy for the less severe cases. In some instances the only cure is an operation.

HERO, a mythological priestess of Venus at Sestos, on the coast of Thrace, for love of whom Leander, a youth of Abydos, swam every night across the Hellespont, guided by a torch in her tower. He was at length drowned in the attempt, and his body was washed ashore. Hero, overcome with anguish, threw herself from the tower on the corpse of her lover and perished.

HEROD, called *The Great*, (about 62-4 b. c.), king of the Jews, was a native of Ascalon, in Judea. Julius Caesar appointed him to the government of Galilee, and after the Battle of Actium, Augustus, to whom he paid court, confirmed him in his kingdom. He rebuilt the Temple at Jerusalem with great magnificence and erected a stately theater and amphitheater in that city. Herod's policy and influence gave a great temporary splendor to the Jewish nation, but he was also the first to shake the foundation of the Jewish government, by dissolving the national council and by appointing the high priests and removing them without regard to the laws of succession. The birth of Jesus Christ is said to have taken place in the last year of Herod's reign.

HEROD AGRIPPA I, a king of Judea, grandson of Herod the Great. For his attachment to Caligula he was imprisoned by Tiberius, but on the accession of Caligula (A. D. 37) he received the government of part of Palestine and latterly all the dominions of Herod the Great. To please the Jews, with whom his rule was very popular, he caused Saint James to be put to death and imprisoned Saint Peter. He died in A. D. 44, under the circumstances related in *Acts* XII, 20-23.

HEROD AGRIPPA II, son of Herod Agrippa I and the last of the Herods. As he was, on his father's death, too young to govern, Judea was reduced to a Roman province. He subsequently received the

kingdom of Chalcis and the superintendency of the Temple at Jerusalem, where, with his sister Berenice, he heard the defense of Paul before Festus. Being driven from Jerusalem by the revolt of the Jews, he joined the Romans and during the siege of Jerusalem was very serviceable to Titus.

HEROD AN'TIPAS, son of Herod the Great, by his Samaritan wife, Malthace, was appointed tetrarch of Galilee on his father's death, about 4 b. c. This was the Herod who put to death Saint John the Baptist, at the request of his unlawful wife, Herodias. He was in Jerusalem at the time of the crucifixion, and Jesus was sent to him by Pilate. Herod went to Rome, where he was accused of being in league with the Parthians and was banished, in consequence, to Lyons, in Gaul, where he died in A. D. 39.

HERODOTUS (about 484-about 424 b. c.), a Greek historian, called by Cicero, the "father of history." He was born at Halicarnassus, in Asia Minor. Before writing his history he traveled extensively, visiting the shores of the Hellespont and the Euxine, Scythia, Syria, Palestine, Babylon, Ecbatana, Egypt, as far as Elephantine, and other parts of northern Africa, everywhere investigating the manners, customs and religion of the people, the history of the country and the productions of the soil. On returning home he found that Lygdamis had usurped the supreme authority in Halicarnassus and had put to death the noblest citizens, among others, the uncle of Herodotus. Herodotus sought an asylum in the island of Samos. Having formed a conspiracy with several exiles he returned to Halicarnassus and drove out the usurper, but the nobles who had acted with him immediately formed an aristocracy more oppressive than the government of the banished tyrant, and Herodotus withdrew to Athens. Later he went to the colony of Thurii in Italy, where he seems to have spent most of the remainder of his life. Here he completed his great history of the contest of Greece with the East.

HEROIN, *he ro'in*, a slightly bitter powder derived from opium, used in the treatment of tubercular and bronchial coughs. Because, like other opium derivatives, it has a habit-forming tendency, it should be used sparingly, and only as prescribed by a physician. A dose of not more than two and one-half grains has been known to cause exhaustion and impaired vision.

HERON, *hehr'on*, the common name for the group of graceful wading birds which live in swamps and along shallow rivers. They are very numerous, and different species are found almost all over the globe. They are easily distinguished by their long bills, cleft beneath the eyes; their slender, compressed bodies; their long, slender, naked legs; three toes in front, the two outer united by a membrane, and by their moderately long wings. Their tails are short, rounded and compressed. With their powerful necks and sharp, strong beaks, herons are able to strike fierce blows. Many of the species have long, ornamental crests and handsome plumes on the throat and body. Though not handsome in flight, because of their habit of stretching their long legs straight out behind them and curling their heads between their shoulders, they are graceful and attractive in their movements on land.

The *snowy heron*, living along the Gulf of Mexico, but sometimes straying farther



GRAY HERON

north, is a handsome bird with pure white plumage and black legs and bill. The *great blue heron* is common in the United States, where it is noticed as a very shy bird which nests even to the extreme north. This is the bird pictured so often in Japanese art.

Related Articles. Consult the following titles for additional information:
 Bittern
 Egret
 Nighthawk
 Stork

HERPES. See SHINGLES (disease).
HERRERA, *err'rah*, FRANCESCO, the name of two famous Spanish painters, father

and son, both of whom were born at Seville. The father (1576-1656), is regarded as the founder of a new national school of painting. His *Last Judgment*, *Holy Family* and *Outpouring of the Holy Spirit* are masterpieces of design and coloring. He was a skilled fresco painter and worker in bronze.

His youngest son, called **HERRERA THE YOUNGER** (1622-1685), became celebrated for his pictures of still-life. He was painter and superintendent of the royal buildings for Philip IV of Spain. Examples of his work are in Seville and Madrid.

HERRICK, MYRON T. (1854-1929) American financier and diplomat, was born in Lorrain Co., Ohio. He attended the public schools, and after a period of study at Oberlin College and Ohio Wesleyan University, he was admitted to the bar. He soon became actively engaged in business and banking. In 1903 he was elected Governor of Ohio, and in 1912 was appointed Ambassador to France, where he remained until December, 1914, greatly endearing himself to the French people by his friendly acts. Again in 1921 he went to Paris as American Ambassador, remaining there until his death in March 1929.

HERRICK, *hehr'ik*, ROBERT (1591-1674), an English poet, born in London and educated at Cambridge. He succeeded to the vicarage of Dean Prior in Devonshire, but because of his royalist principles was forced by the Long Parliament in 1647 to relinquish it. In 1662, after the Restoration, he was reinstated and remained until his death. For more than a hundred years his poems have been read with pleasure and full appreciation of their fine poetic quality. Among his most popular poems are *Corinna's Maying*, *Cherry Ripe* and *Gather Ye Rosebuds While Ye May*, all of which possess in common with his other verse an exquisite sentiment and rare descriptive beauty.

HERRING, one of the most important families of sea fishes. The common herring is of wide distribution in the North Atlantic, extending as far south as 45° north latitude. The North Sea fisheries are famous for their herring catches. This fish measures from ten to twelve inches in length, is blue-green on the back, its under parts are of a brilliant silvery white, and it has small teeth in both jaws.

It was formerly supposed that herrings migrated in two great shoals every summer

from the polar seas to the coasts of Europe and America, returning in the winter, but the migration is probably only from a deeper part of the ocean to a shallower. The feeding ground of the herring is probably the mud deposits found in the deeper parts of



HERRING

the sea, and it seems to be a fact that during their visits to the shallower waters of the coast, for the purpose of spawning, they do not feed, or at least feed very little. In summer the herring leaves the deep water where it has passed the winter and spring months, and seeks the coast, where it may deposit its eggs to be exposed to the influence of oxygen, heat and sunlight, which are essential to their development. These schools are generally followed by multitudes of hakes and dogfishes, and gulls and other sea birds hover over the shoals. Were it not for the fact that untold millions of eggs are deposited, the species would long ago have been extinct, owing to the preying instincts of the larger fishes. The number of eggs produced by one female is known to be as great as 40,000.

The herring swim near the surface and are therefore easily taken by net. Without any apparent cause, they often desert parts of the coast where for a time they have been remarkably abundant, not returning in large numbers till after the lapse of a number of years.

HERRIOT, *er yo'*, EDOUARD (1872-), one of the prominent statesmen of France, by early profession a teacher of rhetoric, who entered politics as a Radical Socialist because of his abhorrence of militarism. His first political office was that of mayor of his home city of Lyons, from 1904 to 1912; he resigned that post to enter the national arena as Senator. Four years later he was appointed Minister of Public Works in the Cabinet of Briand. In the troubled state of French politics he was in and out of various Cabinets during several years. In 1924 he formed his first Cabinet, and in it took the post of Premier. In the crisis of 1925 his government was defeated, but in 1926, for a few months, he was again Premier. Six years later (1932) he formed his third Cabinet,

took the post of Premier, and sought better understandings with Great Britain, Germany, Russia, and the United States. He visited the latter country for discussion with the President concerning international relations. Herriot's was the only influential voice in France to advocate payment of the war debt owed to America.

HERSCHEL, *hur'shel*, the family name of three distinguished astronomers, one of whom was a woman.

Sir William Herschel (1738-1822) was the first astronomer to convey to the human mind a conception of the immensity of the heavens. He discovered Uranus and located the two satellites of Saturn, and worked out the period of rotation of Saturn's ring. His researches place him among the foremost astronomers and natural philosophers. His sister, **CAROLINE HERSCHEL** (1750-1848), who was born in Germany, followed him to England, where she shared his labors, making several important independent discoveries for which the world gives her credit.

Sir John Frederick William Herschel (1792-1871) son of Sir William Herschel, was distinguished as a chemist, as well as astronomer. He undertook as his chief work exploring the southern heavens, thus supplementing the work of his father, whose researches had been chiefly concerned with the northern heavens. At the Cape of Good Hope he spent four years making a complete telescopic survey of the southern constellations. For his contribution to astronomy he was honored by Oxford University and was knighted.

HERVEY ISLANDS. See **COOK ISLANDS**.

HESPERIDES, *hes per'e deez*, in Greek mythology, certain nymphs whose duty it was to guard the golden apples belonging to Hera. In their charge they were assisted by a sleepless dragon, Ladon. The garden where these apples grew was of rather uncertain locality, but Hesiod places it on an island far to the west. It was the eleventh labor of Hercules to kill the dragon and bring the golden apples of the Hesperides to Eurystheus. See **HERCULES**.

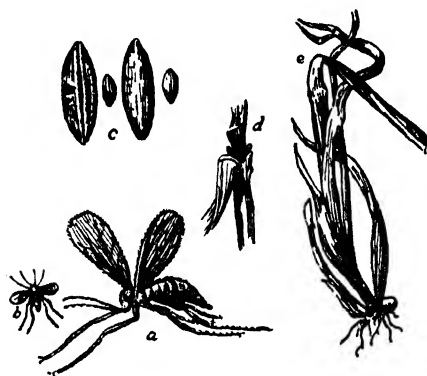
HESPERUS. See **EVENING STAR**.

HESSE, *hes*, a state and a former grand duchy of the German Empire, of which Ernst Ludwig (born 1868) was the reigning grand duke until his abdication in November, 1918. Hesse lies in the west-central part of Germany, and is in two parts, Upper Hesse and

Rhenish Hesse. The area is 2,968 square miles; the population in 1925, 1,347,279, or 453 persons to the square mile. Darmstadt is the capital.

The grand duchy of Hesse originated in the division of the landgraviate of Hesse in 1567, and soon afterward all the territories were included in the two landgraviates of Hesse-Darmstadt and Hesse-Cassel. In 1806 the landgraviate of Hesse-Darmstadt was erected into a grand duchy with an enlarged territory, by Napoleon. It was reduced to its present limits in 1866, in the war between Austria and Prussia, when it had to cede to Prussia some districts in the north, besides Hesse-Homburg, which had been recently reunited with it. Hesse was represented in the government of the Empire as it existed until 1919 by three members of the Bundesrat and nine members of the Reichstag. See GERMANY.

HESSIAN, hesh'an, FLY, a two-winged fly whose young (larvae) are very destructive to wheat, barley and rye crops. It is called the Hessian fly from an unfounded belief that it was introduced into America in the baggage



HESSIAN FLY

a. Fly, magnified; b, natural size; c, pupa cases ("flaxseeds") in different stages, natural size and magnified; d, barley stem, showing "flaxseeds" in position; e, stem bent down as a result of the work of the Hessian fly.

of the Hessians who were employed to fight against the Americans during the War of Independence. The female is about one-eighth of an inch in length, and has a wing expanse of about a quarter of an inch. The body is brown, with the upper parts of the head and thorax of a darker shade, approaching black. The wings are of a dusky gray, surrounded by fringes. The male is somewhat smaller than the female and has longer antennae. The eggs, which are laid in May

and in September of each year, hatch in from four to fourteen days. The maggots work themselves in between the leaf-sheath and the stem of the grain and, fixing themselves near the lowest joints, suck the juices of the stem. The Hessian flies are most injurious in wet weather. The best way to avoid their ravages to winter wheat is to plant the crop after the egg-laying period. To save spring wheat it is a good plan to plant a small strip early enough for the flies to lay eggs in it, and then to plow the grain under.

HESSIANS, hesh'anz, the German soldiers hired by Great Britain to fight against the American colonists in the Revolutionary War. As most of them were from two Hessian provinces, the term was applied to the entire body. These men were forced into the service by their princely rulers, who pocketed the salaries of the mercenaries, allowing each soldier but twenty-five cents a day for his own use. Many Hessians deserted and after the war became American citizens.

HEWLETT, MAURICE HENRY (1861-1923), an English novelist, whose romantic novels picturing medieval life have given him a permanent place in English literature. He secured his education in London and was admitted to the bar in 1891, but the attractions of literature were stronger than those of the bench, and he devoted much attention to the writing of romance. His first popular success, *Forest Lovers*, was followed by *Richard Yea-and-Nay*, *New Canterbury Tales*, *Little Novels of Italy*, *Pan and the Young Shepherd*, *Fond Adventures* and *The Queen's Quair*, all on medieval themes. Mr. Hewlett's later novels deal chiefly with modern life, and are socialistic in tone. Among these are *Open Country*, *The Half-Way House* and *Rest Harrow*. His most recent books are *Brazenhead the Great*, *Love of Proserpine*, *Brendish*, *The Little Iliad*, *The Song of the Plow* and *Thorgils of Threadhoit*.

HEYSE, hi'ze, PAUL (1830-1914), a German novelist, poet and dramatist. Although his dramas were what first won him notice, his fame rests chiefly on his short stories, many of which are classics; of these *L'Arabiata* is considered one of the finest stories ever written. Heyse produced several deftly constructed but pessimistic novels, among them *The Children of the World* and *In Paradise*. *Merlin*, one of his later novels, is a pro-

test against the modern realistic movement. His poetic works include *Urica* and the epics *The Bride of Cypern* and *Thekla*. As a dramatist he was less successful, his plays usually lacking true dramatic qualities. He was awarded the Nobel Prize for literature in 1910.

HEZEKIAH, the twelfth and one of the best of the kings of Judah, who was the son of Ahaz, whom he succeeded. His reign covered the last quarter of the seventh century B. C. During this reign occurred the invasion of Judah by the Assyrians under Sennacherib (see *II Kings* XIX, 35). The destruction of the Assyrian army in a single night is one of the most interesting episodes of this period. It forms the theme of Byron's stirring poem, *The Destruction of Sennacherib*.

HIAWATHA, *hi a wah'tha*, a legendary character whom the North American Indians believed was sent among them to clear the rivers, forests and hunting grounds and to teach them the arts of peace. The myth was made the subject of a famous poem by Longfellow. Suggestions for the study of this poem, with extracts from it, will be found in the article LANGUAGE AND GRAMMAR.

HIBBEN, *hib'en*, JOHN GRIER (1861-1933), an American educator, who succeeded Woodrow Wilson as president of Princeton University. He was born at Peoria, Ill., and was educated at Princeton and at the University of Berlin. After his ordination to the Presbyterian ministry, in 1887, he preached for four years in Chambersburg, Pa., and in 1891 accepted an instructorship in logic and psychology at Princeton, later attaining the rank of professor. In January, 1912, he was chosen president of the institution, a post he held until his death in an automobile accident.

HIB'BING, MINN., in Saint Louis County, on the Great Northern and Duluth, Missabe & Northern railroads, eighty miles northwest of Duluth. It is an important iron and timber district and has great mining and lumbering interests. It is claimed that in the Hibbing district there are half a billion tons of ore. The town claims the largest open pit mine in the world. There is a \$4,500,000 high school and a village hall which cost \$125,000, also a municipal airport and a recreation building. Population, 1930, 15,666.

HIBERNATION, *hi ber na'shun*, the state of stupor in which many animals spend the cold months of winter or periods of

drought and scarcity of food. As the time approaches for this change, the animal takes on fat and becomes gradually more and more slow and inactive in its habits, until finally it passes into a deep sleep or stupor, from which it cannot, in some cases, be aroused until the period of cold or scarcity has passed. The depth and character of this stupor differ decidedly in different animals and in the same animals in different regions; they seem to be governed by the habits of the creatures during many generations. When an animal comes out of this state it has lost very much in flesh, and it is comparatively weak and inert, but after a short time it regains its natural vigor.

Not all animals hibernate; in fact, the hibernating animals are chiefly those that feed upon vegetable matter. Indeed, some of these store food upon which they live during the cold season or, like the squirrels, hibernate for brief periods, which alternate with other periods of hunting for food. The woodchuck is one of the most notable hibernators, and almost all of the burrowing animals are similar in habit. In some species of birds it is only the females that hibernate, though the males sleep for long periods of time. Some mammals hibernate in the Northern states, but not in the South. Frogs, snakes and some fishes hibernate, the land animals burying themselves in the ground below the frost line, and the fish going into the mud beneath the water.

HIBERNIA, *hi bur'ne ah*, the ancient name of Ireland, said to have been applied to it first by Julius Caesar. Aristotle speaks of the island as *Ierne*, and Ptolemy in his description of it uses the name *Juerna*.

HIBERNIANS, ANCIENT ORDER OF, a Catholic organization of Irishmen, said to have been founded as early as 1642, but more probably in 1651, when Cromwell outlawed the native population, placed a price on the head of priests and declared death to every person attending a Catholic service. The organizer was Rory O'Moore (died 1652); its object was to protect the people in this faith. When Catholics were emancipated in 1829 the Order became a benevolent and nationalist organization. It has extended to the United States, Canada, Mexico and Hawaii. The American branch has about 135,000 members.

HIBISCUS, *hi bis'kus*, a large-genus of herbs, shrubs and trees. They are native to

tropical and subtropical regions. Some of them are cultivated for their ornamental value. Of these the *rose of Sharon*, a shrub which has large, variously-colored flowers, and the *Althea*, a small tree with purplish blossoms, are familiar. Belonging to the same family is *okra*, the pods of which are widely used as a vegetable and as a thickening (gumbo) for soup. The root of one variety of hibiscus, cultivated in Japan, produces a mucilage used in paper manufacture. In India hibiscus is cultivated for its fiber.

HICCOUGH, *hik'kup*, or **HIC'CUP**, a sudden convulsive spasm of the diaphragm, which stops the inspiration of air by closing the glottis, an opening from the pharynx into the larynx. The inrush of air against the glottis causes a sharp sound. These convulsions come at brief intervals and may continue for a few moments, for hours, or, rarely, even till they cause exhaustion and death. Acute attacks of hiccoughs may be caused by an overloaded stomach or by some derangement of the digestive processes. These acute attacks may often be stopped by a long, slow inspiration or by a drink of water taken slowly, and oftentimes the attack will stop if the person's attention is distracted from it. Stubborn cases will often yield to a dose of ammonia, camphor or musk, but the administration of an anesthetic is sometimes necessary. Hiccough is also an accompaniment of a number of diseases, such as peritonitis, appendicitis and pneumonia, in which it is regarded as a grave symptom.

HICHENS, *hick'ens*, ROBERT SMYTHE (1864-), an English novelist, best known as the author of *The Garden of Allah*, a story which was first made into an elaborate play and then into a moving picture, and of *Bella Donna*, which was dramatized for Madame Nazimova. Hichens was educated at Clifton College, the Royal School of Music and the London School of Journalism. His novels, which include *Mrs. Marden* (1919), *The Holy Land*, *A Dweller on the Threshold*, *Green Carnation*, *The Way of Ambition*, have considerable dramatic value. Hichens' taste for the theater resulted in several successful arrangements, notably that of *Becky Sharp*. Among his later works were *After the Verdict*, *The Bacchante*, *The Bracelet*, *The Paradine Case*, *The Gardenia*, and *The Power to Kill*.

HICK'ORY, the name given to several species of timber trees, belonging to North America, but to some extent introduced into Europe. They are remarkable for statelyness and general beauty, and they grow to heights of seventy to eighty feet. The wood is heavy, strong and tenacious, and is used for making such things as carriage shafts, handles of golf clubs, whip handles and clogged wheels. The wood is liable to decay more quickly than some other woods, owing to exposure and the onslaught of worms. It makes a valuable fuel, for it develops great heat. The shagbark species yields the hickory nut of commerce. This fruit, a hard-shelled nut, divided into four parts, has a delicate flavor.

HIERARCHY, *hi'er ahr ki*, a body of ecclesiastical rulers. The term comes from two Greek words, *hieros*, meaning *sacred*, and *arche*, meaning *government*. In the Middle Ages the papal hierarchy gathered great temporal strength, and the Pope became a spiritual monarch, ruling western Christendom with power but feebly limited by princes and councils. A reactionary movement began in the fourteenth century, and the general tendency of subsequent events has always been to make the civil and hierarchical power more and more independent of each other. The term *hierarchy*, as used to denote the governing and ministering body in the church, consisting of several ranks, can strictly be applied only to those churches which are ruled by bishops, such as the Roman Catholic and the Anglican churches.



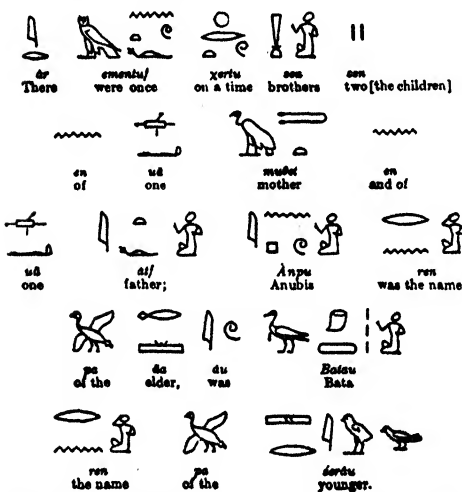
HIEROGLYPHICS, *hi er o glif'iks*, a term applied originally by the Greeks to the written inscriptions sculptured on Egyptian monuments. The word is from the Greek words for *sacred* and *carve*, and refers to the belief of the Greeks that the writing used was confined to sacred subjects and was legible only to the priests. The term as commonly used means any system of writing by means of pictures, but is particularly applied to the writings of

the Egyptians and the Mexicans.

Three different modes of writing were used by the ancient Egyptians, the hieroglyphic,

the hieratic and the demotic. Pure *hieroglyphic* writing is the earliest, and consists of figures of material objects from every sphere of nature and art, with certain mathematical and arbitrary symbols. Next was developed the *hieratic*, or priestly, writing, the form in which most Egyptian literature is written, and in which the symbols almost cease to be recognizable as figures of objects. Hieratic writings of the third millennium B. C. are extant. In the *demotic* writing, derived directly from the hieratic, the symbols are still more obscured. The demotic was first used about the seventh century B. C., and within two or three centuries it had become so common that it was used for practically everything except religious purposes.

Down to the end of the eighteenth century scholars failed to find a clue to the hieroglyphic writings. In 1799, however, a French captain of engineers discovered at Rosetta the celebrated stone, which afforded European scholars a key to the language and writing of the ancient Egyptians. (see **ROSETTA STONE**). It contained a trilingual inscription, in hieroglyphics, demotic char-



EXTRACT FROM THE TALE OF THE TWO BROTHERS

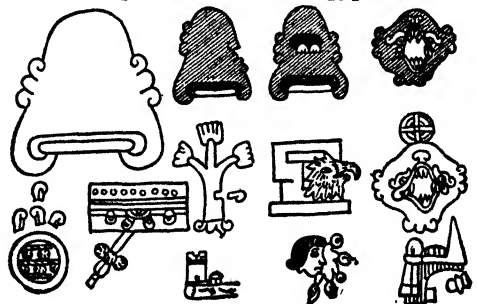
Below the hieroglyphics are given the phonetic spelling and the translation. In this tale is the germ of the Cinderella story. (From the Orbiney Papyrus.)

acters and Greek, which proved to be a decree of the priests in honor of Ptolemy V, issued in 195 B. C. The last paragraph of the Greek inscription stated that two translations, one in the sacred and the other in the popular

Egyptian language, would be found adjacent to it. The discovery of an alphabet was the first task. The demotic part of the inscription was first examined by De Sacy and Akerbald, and the signification of a number of the symbols was ascertained. The hieroglyphic part was next carefully examined and compared with the demotic and Greek. At last, after much study, Champollion and Dr. Thomas Young, independently of each other, discovered the method of reading the characters and thus gave a clue to the decipherment of the ancient Egyptian writing.

Hieroglyphic characters are either *ideographic*, that is, using well-known objects as symbols of conception, or *phonetic*, that is, representing words by symbols standing for their sounds. The phonetic signs are again divided into alphabetical signs and syllabic signs. Many of the ideographic characters are simple enough; thus, the figures of a man, a woman, a calf, indicate simply those objects. Others, however, are less simple and convey their meaning figuratively or symbolically. Water was expressed by three zigzag lines, one above the other, to represent waves or ripples of running water; milk by a milk jar; oil by an oil jar; fishing by a pelican seizing a fish; seeing and sight by an eye, and so on. The accompanying illustration shows the phonetic spelling of a typical hieroglyphic writing.

The hieroglyphics of the Aztecs or Mexicans, used in Central America and Mexico previous to the discovery of America, were much less perfect than the Egyptian. The



MEXICAN HIEROGLYPHICS

characters were for the most part ideographic, and the pictures used were highly conventionalized, though the system was for the most part rude. Most of the manuscripts containing these hieroglyphics have been destroyed, so that the Mexican writing is almost entirely unintelligible.

There have been found groups of hieroglyphics which combine the two kinds of characters—the ideographic and the phonetic. According to Ebers, in the perfected system of hieroglyphics the symbols for sound and syllables are to be regarded as the foundation of the writing, while symbols for ideas are mingled with them to render the meaning more intelligible, to furnish ornamentation or to keep up the mystic character of the hieroglyphics.

HIGGINSON, THOMAS WENTWORTH (1823-1911), an American essayist, conspicuous as an antislavery agitator before the Civil War and known in later years as a warm advocate of woman suffrage. He was born at Cambridge and educated at Harvard, where he studied for the ministry. In 1862 he served as captain of the fifty-first Massachusetts regiment, and in that same year he was made colonel of the first regiment of freed slaves mustered into the national service. After the war he devoted himself to literature and wrote *Outdoor Papers*, *Army Life in a Black Regiment*, *Oldport Days*, *Common Sense about Woman*, *Cheerful Yesterdays*, *History of the United States* and a memoir of Longfellow.

HIGH POINT, N. C., settled in 1840, is in Guilford County, on the Southern and the High Point, Thomasville & Denton railroads, thirty-four miles northeast of Salisbury. The surrounding country is devoted to agricultural and mining industries, among which poultry raising and truck farming are important. The leading industries of the city are the manufacture of furniture, hosiery, cloth, tobacco and cotton. Government is by city manager. There is a furniture exposition building. Population, 1920, 14,392; in 1930, 36,745.

HIGH PRIEST, the head of the Jewish priesthood, who had oversight of the sanctuary and all that pertained to it. He presided over the Sanhedrin and offered sacrifices. His official garments consisted of a blue robe, over which was worn an embroidered vestment called an ephod. He wore also a jeweled breastplate and a coronet-shaped cap. On the Day of Atonement, when he alone was permitted to enter the Holy of Holies of the Temple, he put aside this rich costume and wore a pure white robe.

The office of high priest was first vested in Aaron and was handed down to his eldest son, Eleazer, and so on in lineal succession.

At first the office was for life, but Herod, and afterward the Romans, jealous of the power which so long a term gave the high priest, made and unmade the Jewish pontiffs at will.

HIGH SCHOOL, a public school, ranking in grade of instruction between the grammar school (see **COMMON SCHOOLS**) and the college. The first public high school in the United States was the English High School of Boston, which was established in 1821. Since that time the high school has become a general and potent factor in all systems of public education throughout the country. The courses of study usually include those subjects required for admission to universities and technical schools and such other branches as will fit for life those who do not desire to attend higher institutions of learning. Most high schools now maintain commercial courses, and many have departments of manual training and domestic science.

In large cities technical high schools are common. They have well equipped workshops, laboratories, kitchens, sewing rooms, etc., and they definitely prepare the pupils for various trades and occupations. High schools of commerce having a four-years course of study are also found in most large cities.

The support of the high school in the United States depends upon the system of education in the state where it is located. Most high schools are a part of the city system of schools and are supported in the same manner as other schools. In some states direct state aid is given to high schools which reach a required standing, and such schools are affiliated directly with the state university.

Rural High Schools. Towns and villages having a population of less than 1,500 people are unable to maintain complete high schools, from the standpoint of the Bureau of Education; most states, therefore, have some provision by which adjoining school districts, or one or more townships of the county may be organized with a school district for the organization and maintenance of a full high school course. Most rural communities are by these provisions able to have high schools of as high a standard as those found in the large cities. In Illinois and Indiana the township is the unit of organization, and in California adjoining

districts unite or form a high school district. The courses of study in these schools are similar to those in city high schools, with the exception that greater emphasis is likely to be placed on household arts and agriculture.

Junior High School. The Junior high school is the outgrowth of a recent movement in the reorganization of the American school system on what is known as the "six-and-six" plan, which divides the twelve-year public school period into two periods of six years each, the first including the first six grades and the second the seventh and eighth grades of the grammar school and the four years of the high school. The Junior high school includes the seventh and eighth grades and the first year high school under the old classification, and they are organized on the plan of the high school.

The following advantages are claimed for the junior high school:

1. It enables the pupils to begin high school subjects, for which they are prepared, earlier.
2. It brings pupils under a plan of organization and management better suited to their mental and physical condition than is possible under the old system.
3. By introducing pre-vocational subjects early, it admits of a much better adaptation of the course of study to the needs of the individual pupils.
4. It does away with the gap between the eighth grade and the high school.
5. It keeps pupils in school longer.
6. It brings the high school nearer the pupil, since several Junior high schools can be established in a town where only one senior high school would be possible.
7. It enables teachers to supervise the pupils' study more closely, and more readily to adapt methods of teaching to the mental condition of the pupil.

The Smith-Hughes Act. One of the greatest aids to secondary education which the United States government has given the country is found in the Smith-Hughes Act, which became a law February 23, 1917. The following are its chief provisions:

1. An annual appropriation for coöperating with the states in paying salaries of teachers, supervisors and directors of agriculture.
2. An annual appropriation for coöperating with states in paying the teachers of industrial subjects.

Each of these appropriations began in 1918 with the sum of \$500,000 and is to be increased \$250,000 annually until, in 1926 and each year thereafter, \$3,000,000 is appro-

priated. These appropriations are apportioned among the states according to the proportion of the rural population of each state to the rural population of the United States.

3. An annual appropriation for training teachers of agriculture and industrial education.

4. The creation of a Federal Board of Vocational Education, consisting of the Secretary of Agriculture, the Secretary of Labor, the Secretary of Commerce, the United States Commissioner of Education and three citizens of the United States, to be appointed by the President with the advice and consent of the Senate. One of these appointees represents the agricultural interests, one the labor interests and one the interests of manufactures and commerce.

Requirements. Any state desiring to derive benefits from this act must meet the following requirements:

1. The state must formally accept the offer by an act of its legislature, and appoint a state board with power to coöperate with the Federal Board of Vocational Education.
2. The state board must make definite plans showing the kinds of vocational education for which the appropriation is to be used; the kinds of schools and equipment, methods of instruction and qualifications of the teachers in these schools. This plan is submitted to the Federal Board of Vocational Education for approval.
3. The education to which this appropriation is applied must be below college grade.

HIGH SEAS, the open sea or ocean. The claims of various nations to exclusive rights and superiority over extensive tracts of the ocean-highway have been settled after much controversy by a general international agreement, namely, that the jurisdiction of maritime countries extends only for three miles from their own coasts; the remainder of the seas are accessible on equal terms to all nations. Inland seas and estuaries, of course, are excepted.

HIGHWAY. See ROADS AND STREETS.

HILL, an elevation of land rising above the surrounding country. The distinction between hill and mountain is one of altitude; any elevation over 2,000 feet high is technically a mountain.

Hills are frequently formed by erosion (see EROSION); for instance, the wearing away of plateaus by streams frequently cuts them into hills, whose crests are on a level with the surface of the plateau (see MESA). Hills are sometimes formed by volcanic action. These take the form of cones and are found in the craters of volcanoes, or they may

have been formed by the cooling of molten lava, the lava streams being known as *coulees* (see VOLCANO). They may be formed by glaciers, which on melting deposit their load of stones and gravel (see MORaine). The ranges of hills about the base of mountains are called foothills. See MOUNTAIN.

HILL, AMBROSE POWELL (1825-1865), an American soldier. He was graduated from the United States Military Academy in 1847, entered the first artillery and was made second-lieutenant. He served in the Mexican War and afterward on the frontier and in Florida. Later he was promoted to a captaincy. At the outbreak of the Civil War he entered the Confederate service, was appointed colonel of the thirteenth regiment of Virginia volunteers and was ordered to Harper's Ferry. He fought at the first Battle of Bull Run, at Antietam, Fredericksburg, Chancellorsville and Gettysburg, was made brigadier-general and later major-general.

HILL, DAVID BENNETT (1843-1910), an American politician and one of the ablest lawyers of his time, was born in Havana, N. Y. He was admitted to the bar in 1864, practiced law at Elmira and in 1870-1871 served in the state legislature. In 1882 he was elected mayor of Elmira; in November of the same year, was chosen lieutenant-governor of New York State, and in 1884, when Governor Cleveland resigned the position of governor, he succeeded to that office. In 1885 he was elected governor for the term expiring in 1888 and was reelected. He then became United States Senator for New York State, but failed of reelection because the legislature elected in 1896 was Republican. He was a Presidential candidate in 1892.

HILL, DAVID JAYNE (1850-1931), an American author and educator, born at Plainfield, N. J., and educated at Bucknell University. He was professor of rhetoric in his *alma mater* for two years, and then became president of the institution. In 1888 he was called to the presidency of the University of Rochester, where he remained eight years. For five years he was assistant secretary of state at Washington. He was then in turn minister to Switzerland, minister to the Netherlands, and ambassador to Germany (1908-1911). He is the author of *A History of Diplomacy in the International Development of Europe*, *Americanism—What It Is* and *The Rebuilding of Europe* (1917).

HILL, JAMES JEROME (1838-1916), an American capitalist and railroad man, the "builder of a Northwestern empire," was born near Guelph, Ont., of Scotch-Irish descent. He early emigrated to Minnesota and settled in Saint Paul, then a village of 5,000 people, where he was employed in steamship offices until 1865. Later he engaged in independent fuel and transportation business, becoming interested in extending communication between the Mississippi River and the North and West. Gaining control of the Saint Paul & Pacific railroad company, he reorganized the system, became successively its general manager, vice-president and president and made it the nucleus of the Great Northern system, which he organized in 1890, having meantime completed rail communication between Lake Superior and Puget Sound and established a steamship line between America and the Orient. In 1902 he was the chief promoter of the Northern Securities Company, which aimed to establish a community of interest between several trans-continental lines.



JAMES J. HILL

He became a great banker, and so keen were his perceptions that he was recognized as one of the ablest advisers and leaders in financial circles. Although always a Western man, he was made vice-president of the New York Chamber of Commerce. For several years before the World War he was the trusted friend and adviser of King Albert of Belgium in financial and economic matters.

HILLIS, NEWELL DWIGHT (1858-1929), a Presbyterian clergyman, born at Magnolia, Iowa, and educated at Iowa College, Lake Forest University and McCormick Theological Seminary. He served as pastor at Peoria, Ill., and Evanston, Ill., and succeeded David Swing as pastor of Central Church, Chicago. In 1899 he accepted a call to Plymouth Church, Brooklyn. Among his principal books are *The Investment of Influence*, *How the Inner Light Failed*, *Great Books as Life Teachers*. *Prophets of*

a New Era, Battle of Principles, Misfortunes of a World Without Pain, Studies of the Great War and The Story of Phædrus.

HIMALAYA, *him mah'la yah*, a chain of snowy mountains in Asia, the highest in the globe, which separate the Indian peninsular from the Tibetan plateau, reaching in almost unbroken grandeur from the valley of the Indus on the west to the bend of the Brahmaputra, 1,500 miles eastward, in a series of rugged peaks estimated from 16,000 feet to the 29,141 feet with which Everest challenges the skyline. Other peaks are Kanchenjunga (28,156 ft.), Nanga Parbat (literally, "Naked Mountain", 26,629), Dhawalaghiria (26,826) and Kamet (25,857). In a transindian range, known as the Karakorams, is Mount Godwin-Austen or "K2", (28,278).

The Himalayas abound in giant glaciers, the longest being the Zamu, which is 18 miles long. There are no known volcanoes, but earthquakes are frequent. Vegetation is extremely varied, from oaks, chestnuts, and pines (7,000 to 12,000 feet), to gnarled rhododendrons and shrub up to 14,000 feet, when vegetation ceases. The mountains also abound in animal life. Tiger and the larger carnivora are frequently met from 3,000 to 10,000 feet, and deer and mountain goat also are found. Woodcock and pheasant, with innumerable variety among the smaller birds, are common up to 12,000 feet. The large Humayan monkey (sacred to the Hindu) abounds.

Since 1919 the inner fastnesses and heights have formed an increasing field of exploration. The British Himalayan Club has sponsored expeditions to Everest and Kanchenjunga. The latter is considered less accessible (because of dangerous avalanches) than Everest. A lone American (Fulton) left his Tibetan coolies at a height of 24,500 on Kanchenjunga, and was never seen again. A German expedition did not travel higher. A British expedition reached over 25,000 feet, and then was forced to abandon the climb after two coolies had been overwhelmed in an avalanche which narrowly missed wiping out the European party.

Everest can only be reached by traversing Tibetan or Nepalese territory, and those governments are loathe to grant permits because of the superstitious fear that the god of the mountain will be enraged. This fear has increased since the last expedition, when

British climbers were actually on the mountain and British planes had just flown over it (Houston expedition), when Nepal and Bihar were ravaged by an unprecedentedly severe earthquake. A British party reached 28,000 feet on Everest, and Irvine and Mallory were last seen going strong towards the summit. A later expedition found Mallory's ice-axe at 28,000 feet, but here, again, they were checked.

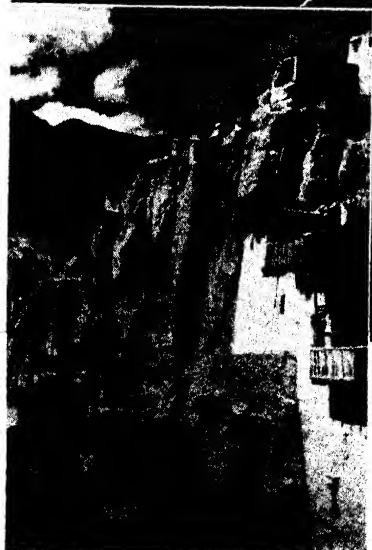
HINCKS, FRANCIS, Sir (1805-1885), a Canadian statesman, born at Cork, Ireland. In 1832 he engaged in business in Toronto, where he became a friend of Robert Baldwin. In 1835 he was chosen to examine the accounts of the Welland Canal, whose management was being attacked by William Lyon Mackenzie. His attention being thus turned to political life, he founded the *Examiner*, a paper supporting the Liberals, and in 1841 was elected to Parliament. In two of Baldwin's ministries he was inspector general (Minister of Finance) and from 1851 to 1854, after Baldwin's retirement, he was Premier of Canada. In 1855 he



SIR FRANCIS HINCKS

was chosen governor of Barbados, and later of British Guiana. Returning to Canada in 1869 he became Minister of Finance in the Cabinet of Sir John Macdonald. He resigned in 1873 but continued to take an active part in public life until his death.

HINDENBURG, PAUL VON BENECKENDORFF UND VON (1847-1934), a titanic military figure in the World War, and later peace-time President of republican Germany. His career began in 1866, when he served in the Seven Weeks' War with Austria. He also fought in the Franco-German War, participating in the Battle of Sedan, and after the conclusion of hostilities he attended a military school. He reached the rank of lieutenant-general in 1903, but in 1911 was retired. Hindenburg was not in general favor when the Great War broke out, because he was believed to be riding a hobby. That is, he wearied people by insisting that the marshy region in East Prussia, in the vicin-

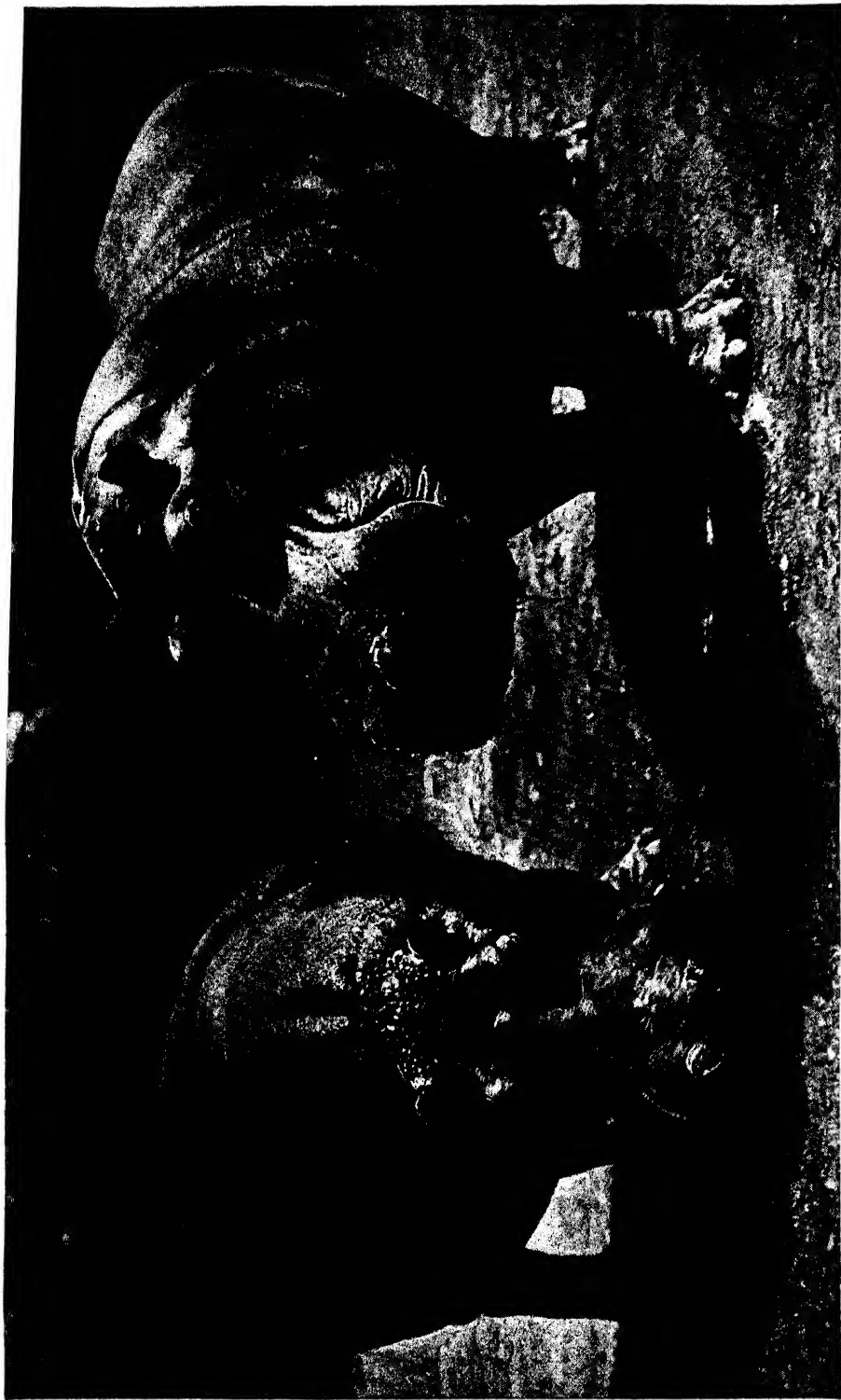


Keystone

Ewing Galloway

A CHALLENGE TO THE COURAGE AND STRENGTH OF MAN

Above is a view of Mount Godwin-Austen, second only to Everest in height, whose summits have never been reached. At left, a singular Tibetan village, built on precipitous rocks on the mountainside.



Ewing Galloway

GREAT BEASTS OF AFRICAN RIVERS AND JUNGLES
When full-grown, the hippopotamus will weigh from three to four tons. These specimens in captivity may be seen in the Philadelphia Zoological Gardens.

ity of the Masurian Lakes, was important from a military standpoint, and while lecturing in the War Academy he had located many imaginary battles there. This idea was ridiculed in military circles. Hindenburg, however, was able to prove the soundness of his tactical theory, for early in the war the emperor gave him the chief command of the campaign in East Prussia against Russia, and in the vicinity of those lakes he completely defeated two Russian armies.

The emperor later rewarded him by making him field-marshal and chief of the general staff, and in the closing months of the war, with Ludendorff, he directed the German offensives on the Western Front. When the allied forces broke the intricate system of German defenses, called the "Hindenburg line," German defeat followed.

The aged general could not retire to private life. In 1925 he was elected President, and served the republic so patriotically that in a second election (1932) he won again decisively. He died after Hitler's ascendancy; his great influence to the last was a restraining influence upon the new dictator. He was buried amid great pomp in the Masurian Lakes district, the scene of his greatest military successes.

HINDU, *hin doo'*, the largest social and religious order in India, racially mixed but mainly Aryo-Dravidian, with a caste system dating back to 3102 B. C., of which the Brahmin or priestly caste (Brahma means "Universal Soul," the "Absolute") at the head. Hindus believe in the cycle of life through various transmigrations, vegetable, animal, and human, until perfection is reached in the Brahmin.

HINDUSTAN, *hin doo stahn'*, the name which was formerly given to the whole Indian Empire, but which properly applies only to the Punjab and the Ganges Valley. See INDIA.

HIN'NOM, VALLEY OF. See GEHENNA.

HIPPOCAMPUS, or **SEA HORSE**, a genus of sea animals belonging to the same family as the pipefish (which see). The name hippocampus, which comes from two Greek words means *horse* and *sea monster*, and was given this animal because of the similarity between its head and that of a horse. The animal resembles a fish only in that it lives in the water and breathes by means of gills. Its body, from six to ten inches long, is covered with bony plates, and

ends in a tightly coiled tail. It has a long snout, large eyes and a mane of spiny projections. It is a poor swimmer, moving about in an upright position, and usually is found anchored by its tail to growing seaweed. The male carries the eggs in a little pouch until they hatch.

HIPPOCRATES, *hip pok' ra tees* (460-357 B. C.), a famous ancient Greek physician, often called the "father of medical science," was born on the island of Cos, off the coast of Asia Minor. He was believed by the Greeks to have descended from the gods, and he became a priest-physician. He advocated pure air, water



SEA HORSE

and sunshine, and made hospitals of the temples, where his patients petitioned their gods at the same time that they received physical treatment. In some of his theories Hippocrates was 2,000 years ahead of his time. He died at an advanced age in Thessaly.

HIPPODROME, the Greek name for the public place where the horse and chariot races were held. In Byzantine times the hippodrome at Constantinople was widely famous, and factions originating in the hippodrome caused perpetual confusion in all departments of the public service. The Circus Maximus at Rome was one of the largest of these structures that was ever built. It was 1,875 feet long, and according to Pliny, could accommodate 260,000 spectators. The name is sometimes applied to a modern circus, and specifically to great amusement places in London and New York.

HIPPOPOTAMUS, an unwieldy African animal, of which two living species are known. Next to the elephant it is the heaviest of all land animals. One species of large mammoth size, weighing as much as 8,000 pounds, with a length of twelve to fourteen feet, stands four to five feet in height. It is common throughout the greater part of the continent. The other is not only smaller, but has other important differences and is found only in the west coast rivers and those flowing into Lake Chad.

The large species has a thick, square head, a very large muzzle, small eyes and ears, a thick and heavy body, short legs, a short tail and no hair, except at the extremity of the

tail. The animal is killed by the natives, partly for food, but chiefly on account of the teeth, which are harder than ivory and less liable to turn yellow. Hunting it, however, is dangerous sport.

The hippopotamus is remarkable for its "blood sweat," a blood-red fluid exuded from



HIPPOPOTAMUS

and covering the skin, but it has no connection with the blood. The animal delights in water, living in lakes, rivers and estuaries and feeding on water plants or on the herbage growing near the water. Although very clumsy on land, it is an excellent swimmer and diver and can remain under water a considerable time. The hide is thick, spongy and rough, without hair.

HIRAM, a king of Tyre who lived at the time of David and Solomon. He contributed cedar from the forests of Lebanon and skilled workmen to help in the building of Solomon's temple (*I Kings* V, 1-12), and supplied the Israelitish king with a navy. Hiram constructed strong fortifications at Tyre, and waged a war against Cyprus, in which he was successful. See **TYRE**.

HIROSHIMA, *he ro shé'mah*, **JAPAN**, situated near the southwestern extremity of the island of Hondo, on the coast and on the railway connecting Osaka with Shimonoseki. It is one of the important commercial ports of the empire and has a large trade in lacquer ware and bronzes. Population, 1930 census, 270,417.

HIRSCH, *heersh*, **EMIL GUSTAV** (1852-1923), an American rabbi. He was born in Luxembourg and at the age of fourteen emigrated to the United States. After graduation

at the University of Pennsylvania he went to Germany for study at Berlin and Leipzig. At different times he was rabbi at Baltimore, Louisville and Chicago; in the last-named place he was highly influential in promoting Jewish social-settlement work. From 1888 to 1897 Rabbi Hirsch was president of the Chicago Rabbi Library Board. From 1892 until his death he was professor of Hebrew in the University of Chicago.

HISPANIA, *his pa'ni a*, the ancient name given by the Romans to the peninsula of Spain and Portugal. The Greeks knew it as Iberia, and the earliest inhabitants were called Iberians. By some of the Roman poets it was called Hesperia, meaning the *western land*. See **SPAIN**; **IBERIA**.

HISTOLOGY, *his tol'o jy*, that branch of anatomy which treats of the microscopic structure of the different tissues of the body. The science originated as far back as the seventh century, but it made little progress until the invention of the compound microscope in the nineteenth century. Since that time, by the combination of the microscope and camera, many important discoveries have been made. It was through histology that the peculiar cell structure of the different tissues was discovered; also by the aid of the microscope the presence of nerves and blood vessels in these tissues was revealed. Many diseases are determined by studying the different tissues and glands under the microscope, because most of these diseases are due to disorganization of the cells.



HISTORY, in the broadest sense of the word, refers to everything that has happened; not merely the history of people or of nations, but of the changes and phenomena of nature as well. It includes everything that changes. As modern science has shown that everything changes, therefore the whole universe and every part of it have a history. There is a history of geography, of

physics, of mathematics, just as there is a history of the nations of the world. And not only is there a history of geography, but geography is a part of the history of countries. Ancient Greece was divided into

many small states; some of them, like Athens, were cities smaller than many of our cities to-day. Why was Greece divided into so many states? Because mountains, rivers and the sea formed natural divisions which the people could not easily overcome. It is then clear that we must know something of the geological and geographical divisions of Greece before we can understand the political divisions.

So, too, if we consider the history of the United States, we shall see that the formation of the land held great significance. Why did the early settlements spread north and south along the Atlantic Coast? Why, when the settlements spread to the westward, did they travel in parallel lines, so that settlers from Pennsylvania crossed the mountains to Ohio, Indiana and Illinois, and settlers from Virginia and the Carolinas crossed to Kentucky and Tennessee? A moment's thought will show us how different the history of the country might have been if Virginians had mixed with Pennsylvanians in Ohio, and if New Englanders had mixed with Carolinians in Tennessee. It may seem strange to us that so many more elements are included in history than we had imagined. Many think of it as a list of kings and battles and a few important dates, but it is much more. History is a record of living forces and living people; history is being made every day just as history was made a hundred or a thousand years ago. Life was very much the same then as it is now. Probably there were other forces at work then; perhaps some of them were the same as those now in operation. To study these forces and their results, to show the development of nations as social, political and economic units, is the purpose of history in the common sense of the word.

The word *history* comes from a Greek word which was used centuries before Christ to denote the search for knowledge in the widest sense. History meant investigation and inquiry, not narration and description; it began as a branch of scientific research. It was not until many years later that the "historian" meant the man who told the story and not the seeker after knowledge. In the course of time a "history" became the story which the historian told.

Present-Day Application. There are three present-day uses of the word. In the first place, history means the individuals,

events, forces and institutions which together show the progress and growth of a nation, in other words, the facts of history; in the second place it means the branch of science which studies these facts; and finally, it means the branch of literature in which they are presented. The first meaning, the facts and materials of history, has already been explained; let us simply bear in mind that the "history of a people includes every item which has interest or importance in connection with that people's life and growth."

There remains the explanation of the two other meanings, which refer rather to the arrangement and presentation of the facts than to the facts themselves. Viewed as research, it is a science; viewed as a branch of literature, it is an art. In a general way, we find two schools of historians, one school giving prominence to the subject-matter, the other to the form. History as a science flourishes in a scientific age; history as an art rises and falls with the arts. As an art it calls upon the imagination and the powers of expression. Those periods which have been influenced by masters of style have been less interested in the methods of investigation than in the beauty of their rhetoric. Macaulay often seems to sacrifice strict accuracy of detail in order to make a rhetorical point. The historian as an artist looks upon his subject as a great picture whose details must be subdued in order to make a harmonious whole, even though the outlines are dimmed and the colors blurred. The scientific historian, on the other hand, generally feels that the facts must be presented as they are. History, the art, is dependent on the individual artist, but history as a science has developed along scientific lines.

The historian of to-day has at his disposal a great amount of machinery and material accumulated by the past, splendid collections of documents and manuscripts, now opened to research, giving him opportunities which were for many years denied to his predecessors. The scientific historian defends no theory or thesis, he seeks to lay bare the truth. To illustrate the relation of history to its sister arts and sciences, let us take two typical examples. The first years of the nineteenth century were, with a few exceptions, characterized by romanticism, with its exaggeration of the individual; Macaulay's *History of England* and Carlyle's works are typical of the age. Carlyle's "great man

Outline of Ancient History; to A. D. 476

I. RACES OF MAN

(1) Divisions

- (a) Caucasian or white
- (b) Mongolian or yellow
- (c) Malay or brown
- (d) Negro or black
- (e) American or red

(2) Development of civilization

- (a) Stone Age
- (b) Bronze Age
- (c) Iron Age

II. CIVILIZATIONS OF THE EAST

(1) Egypt

- (a) Old Empire, first seventeen dynasties

- (1) M e n e s, legendary founder

(2) Pyramid builders

- (a) Cheops
- (b) Shafra
- (c) Menkara

(b) Hyksos or Shepherd kings

- (a) Dark Ages of Egyptian history
- (b) Exile of the Children of Israel

(c) New Empire

- (a) A m o s i s establishes Theban dynasty
- (b) Thothmes III
- (c) Amunoph III
- (d) Rameses I
- (e) Rameses II
- (f) Later rulers

(2) China

- (a) Legendary history
- (b) Reign of Yao (about 2350 B. C.)

(c) Shun

(d) Yu

(e) Shang dynasty

(f) Chow dynasty

(1) Confucius

- (2) People change from nomadic to agriculture state

(g) Tsin or Chin dynasty

- (1) Great Wall of China built

(2) Buddhism introduced

(h) Tang dynasty

(3) Chaldea, Assyria and Babylonia

- (a) Chaldean supremacy, 2300-1400 B. C.

- (1) Nimrod, founder of the Empire

(2) Kudur-Nakhunta

- (3) Kudur-Lagamer, also known as Chedor-laomer

- (b) Assyrian supremacy, 1400-625 B. C.

(1) Tiglath-Pileser I

- (2) Vul-lush III and his queen Semiramis

(3) Sargon

(4) Sennacherib

(5) Saracus

(c) Babylonian supremacy

- (1) Becomes independent under Nabonassar

(2) Nabopolassar

- (3) Nebuchadnezzar, 604-561

- (a) Captures and subdues Jerusalem

(b) Siege of Tyre

- (c) Babylonia's Golden Age

(4) Fall of Babylonia

(4) The Hebrew Nation

- (a) Under the patriarchs

(b) In Egypt

(1) Joseph

(2) Moses

(3) Aaron

(c) The Exodus

(d) The Judges

(e) The Kingdom

(1) Saul

(2) David

(3) Solomon

- (f) Kingdom of Israel

- (g) Kingdom of Judah

(5) The Phoenicians

- (a) Sidon

- (b) Tyre

(6) Persia

- (a) Cyrus the Great
- (b) Darius I
- (c) Xerxes I
- (d) Artaxerxes I
- (e) Decline of the Persian Empire

III. CIVILIZATIONS OF THE WEST

- (1) Greece
 - (a) Legendary Age
 - (b) Early history of Sparta
 - (c) Early history of Athens
 - (d) Graeco-Persian Wars
 - (1) First expedition of Xerxes
 - (2) Battle of Marathon
 - (3) Thermopylae
 - (4) Salamis
 - (5) Plataea and Mycale
 - (e) Athenian supremacy
 - (1) Themistocles
 - (2) Aristides the Just
 - (3) Confederacy of Delos
 - (4) Ages of Pericles
 - (f) Spartan and Theban supremacy
 - (1) Peloponnesian Wars
 - (2) Sparta the leading state in Greece
 - (a) Xenophon and the Ten Thousand
 - (b) Oppression of the oligarchies
 - (3) Thebes
 - (a) Victory of Epaminondas at Leuctra
 - (b) Death of Epaminondas and decline of Thebes
 - (g) Macedonian supremacy
 - (1) Philip of Macedon
 - (2) Alexander
 - (a) Battle of Issus
 - (b) Siege of Tyre
 - (c) Conquest of Egypt
 - (d) Arbela
 - (e) In India
 - (f) Character of Alexander
 - (h) Division of the Empire
 - (1) Syria
 - (2) Thrace
 - (3) Macedonia

- (4) Egypt under the Ptolemies

- (2) Rome
 - (a) Legendary
 - (1) Romulus
 - (2) Numa
 - (3) Servius Tullius
 - (4) Tarquin the Proud
 - (b) The Republic
 - (1) Samnite Wars
 - (2) Struggle between Rome and Carthage
 - (a) First Punic War
 - (b) Second Punic War
 - (c) Third Punic War
 - (1) Roman treachery
 - (2) Fall of Carthage
 - (3) Civil wars and class strife
 - (a) The Gracchi
 - (b) The Social Wars
 - (c) Marius and Sulla
 - (d) The First Triumvirate
 - (1) Caesar
 - (2) Pompey
 - (3) Crassus
 - (e) Civil War between Caesar and Pompey
 - (1) Caesar in Gaul
 - (2) Caesar's triumph
 - (a) Crossing the Rubicon
 - (b) Battle of Pharsalia
 - (3) Death of Caesar
 - (f) Second Triumvirate
 - (g) The Empire
 - (1) Its glory
 - (a) Augustus
 - (b) Tiberius
 - (c) Nero
 - (d) Trajan
 - (e) Hadrian
 - (f) Marcus Aurelius
 - (2) Decline and fall
 - (a) Commodus
 - (b) Diocletian
 - (c) Constantine the Great
 - (d) Julian the Apostate
 - (e) Theodosius the Great

theory of history," his "hero-worship" is logically connected with the age of Scott, Byron and Keats; it was a philosophy of history which might furnish poets with inspiration. Later in the nineteenth century came a scientific age, the age of Darwin and Spencer, of Buckle and Guizot, of practical statesmen rather than poets. It is almost invariably true that histories deal with subjects which interested the age in which they were written. Modern historians began with politics and wars, but as the interest of the people was drawn toward the economic and social factors, these two were considered by historians. Histories of commerce, of industries, of cities are now as common as histories of wars and robber-barons. We know that no one of these is more than one of the many factors which make up the complex forces of civilization.

Ancient History. The period of ancient history is by far the largest of the three great divisions of recorded history. In addition to more or less authentic records there is a body of legend and tradition, some of it perhaps based on facts; most of it, unfortunately, is so mixed with myths and religious superstitions that its value as history is doubtful. Vergil's record of the wanderings of Aeneas and Homer's account of the Trojan war may be accepted as histories only because we have little other evidence in regard to these events; they may or may not present an accurate picture but they are founded on actual events and persons. These legends are of value because they tell us something of the people and events.

There are other great fields of historical study, which enable us to reconstruct ancient civilizations, though they tell us little or nothing of single incidents. These fields of study are anthropology, which is the history of man as a unit in the animal kingdom; ethnology, the history of man as racial units, and ethnography, the history of the distribution of the races and nations, thus formed, over the earth. The study of these topics properly accompanies a thorough knowledge of ancient history, because it gives a background and perspective which can be acquired in no other way. For the same reason the study of mythology, of painting and sculpture, of architecture, even of domestic life, has its proper place alongside the study of great men and important events. In our study of recorded history we should combine

these subjects so that history fulfills its true purpose of giving us a complete picture and an accurate understanding of past and present civilizations. Alexander's system of imperial government is as much a part of history as the Battle of Issus; the domestic life of the Romans is fully as important as the character of Caesar or Nero or Constantine the Great in explaining the course of Roman history. The following outline shows the outstanding events of ancient history. For a series of ancient history charts see the articles on Egypt, China, Greece, Rome, Mythology and Mohammedanism.

Medieval and Modern History. The more we study history the more fully we realize that all divisions into ancient, medieval and modern are purely arbitrary. It is convenient to be able to pick out a definite date and say "modern history begins here." As a matter of fact, we find that there is no real break in the continuity of events. We say the fall of Rome in A. D. 476 ends the period of ancient history, but Roman influence has continued even to our own time.

Some historians say that the discovery of the New World marks the beginning of modern history. The establishment of a new dynasty in one country may have an effect similar to a successful war in another country. The truth is that we must look beyond the mere date to a connected account of causes. The beginnings of the Reformation can be traced for a hundred years before Luther nailed the ninety-five theses to the doors of the church at Wittenberg. The beginnings of the French Revolution were apparent for many years before Louis XVI was executed. Especially in modern history it becomes almost impossible to pick out a date as the starting-point of a great movement or to isolate events in one country from those in another. Improved means of transportation and communication, the resulting intermingling of opinions and of peoples, and the inevitable effect on other nations make it impossible for us to say, "Let us study only England or Germany in the nineteenth century."

Not even among the ancient barbarians can we pick out a nation which had no relations with other nations. If we are to study the many wars between England and France as independent units we shall soon be in hopeless confusion. If we relate them to the general history of Europe, we shall find

Medieval History, 476 to 1492

I. THE DARK AGES, 476-1050

- (1) Germanic migrations
 - (a) Ostrogoths in Italy
 - (b) Visigoths in Spain and Gaul
 - (c) Burgundians in Gaul, 443-534
 - (d) Vandals, 439-533
 - (e) Franks, 486-752
 - (f) Lombards in Italy, 568-774
 - (g) Angles and Saxons in England, 449
- (2) Fusion of Romans and Teutons
- (3) Eastern Empire
- (4) Mohammed and the Saracens
 - (a) Religion
 - (b) Conquests
 - (c) Driven out of Europe
- (5) Empire of the West
 - (a) Pepin
 - (b) Charles Martel
 - (c) Charlemagne
 - (d) Division of the Empire
- (6) The Northmen
 - (a) Causes of migrations
 - (b) Settlements and conquests
 - (1) Scotland and Ireland
 - (2) Iceland, Greenland, America
 - (3) Russia
 - (4) Constantinople
 - (5) England
 - (6) Gaul
- (7) Rise of the Papacy

II. THE AGE OF REVIVAL, 1050-1492

- (1) Characteristic institutions
 - (a) Feudalism
 - (1) Origin and causes
 - (2) Form of the system
 - (3) Chivalry
 - (b) Monasticism
 - (1) Origin
 - (2) Hermits and anchorites
 - (3) Monks and monasteries
- (2) The Crusades, 1096-1272
 - (a) Causes
 - (b) The expeditions
 - (c) Effects
- (3) Struggle between the Empire and the Papacy

- (a) Gregory VII against Henry IV

- (b) The Hohenstaufens
- (c) Innocent III, 1198-1216

- (1) His character
- (2) Quarrel with John
- (3) Lateran Council

- (d) Great Schism, 1378-1414

- (1) Rival popes
- (2) Council of Constance

- (e) Papacy loses its temporal power

- (4) The development of nations

- (a) England

- (1) Under the Normans,
- (2) Under the Plantagenets

- (b) France

- (1) House of Capet, 987-1328

- (a) English possessions there

- (b) Crusades and persecution of the Albigenes

- (c) The States-general

- (2) House of Valois, 1328-1498

- (c) Germany

- (1) The successors of Charlemagne

- (2) Conrad of Franconia and the Saxons

- (3) Lothair of Saxony, and the Hohenstaufens, 1125-1254

- (4) The great Interregnum, 1254-1273

- (5) Rise of the Hapsburgs

- (d) Spain

- (1) Union of Castile and Aragon

- (2) Conquest of Granada, 1492

- (3) Growth of royal power

- (4) Inquisition and its lasting effects

- (5) Discoveries in the New World

- (e) Italy

- (f) Russia

Modern History, from 1492

I. THE REFORMATION AND THE RELIGIOUS WARS, 1500-1648

- (1) Germany and Switzerland
 - (a) The humanists
 - (b) Luther and the Edict of Worms, 1521
 - (c) Council of Trent, 1545
 - (d) John Calvin
- (2) Denmark, Norway and Sweden
- (3) Rise and fall of Spain
- (4) England under the Tudors, 1485-1603
 - (a) Henry VIII, 1509-1547
 - (1) Act of Supremacy, 1534
 - (2) Articles of Faith, 1539
 - (b) Edward VI, 1547-1553
 - (c) Mary, 1553-1558
 - (d) Elizabeth, 1558-1603
- (5) France
 - (a) Beginnings of Reformation
 - (b) Civil Wars
- (6) Thirty Years' War, 1618-1648

II. ERA OF ABSOLUTISM AND DYNASTIC WARS, 1648-1789

- (1) England
 - (a) James I, 1603-1625
 - (b) Charles I, 1625-1649
 - (c) The Commonwealth and Protectorate, 1649-1660
 - (d) The Restoration
 - (e) William and Mary, 1688-1702
 - (1) Bill of Rights, 1689
 - (2) Act of Settlement, 1701
 - (f) Anne, 1702-1714
 - (1) War of the Spanish Succession
 - (2) Union with Scotland,
- (g) Supremacy of England under the House of Hanover
 - (1) Development of cabinet government
 - (2) Foreign affairs
- (2) France
 - (a) Ascendancy under Louis XIV
 - (b) The regency, 1715-1723
 - (c) The struggle with England for supremacy
 - (1) Loss of Colonies

(3) Russia

- (a) Peter the Great, 1682-1725
- (b) Catharine II, 1762-1796

(4) Rise of Prussia

- (a) The Great Elector
- (b) Frederick William I
- (c) Frederick the Great

III. REVOLUTION AND RECONSTRUCTION

- (1) The French Revolution and the Era of Napoleon
 - (a) The National Assembly
 - (b) The Reign of Terror
 - (c) The Directory
 - (d) The Consulate, 1799-1804
 - (e) The Empire, 1804-1815
- (2) Great Britain
 - (a) The Reform Bill
 - (b) Repeal of the Corn Laws
 - (c) Free Trade
- (3) The revolutions in 1830
 - (a) July Revolution in Paris
 - (b) Belgium independent
 - (c) Insurrection in Poland
- (4) The revolutions of 1848
 - (a) In France
 - (b) In Germany
 - (c) Italy
- (5) Unification of Italy
- (6) Unification of Germany
- (7) Russia
 - (a) Crimean War
 - (b) Congress of Berlin
- (8) The United States
 - (a) Formation of the Union
 - (b) War of 1812
 - (c) The Civil War

IV. THE WORLD AT WAR.

- (1) Declarations of War
- (2) Bolshevism in Russia
- (3) Defeat of Germany and allies
- (4) Treaty of Versailles
- (5) New states organized

V. AFTER 1920.

- (1) Reparations conferences
- (2) Italy under Mussolini
- (3) Germany under Hitler
- (4) Money standards altered
- (5) Japan invades Asiatic mainland
- (6) Italo-Ethiopian war
- (7) Accession of Edward VIII

that each falls into its proper place. If we consider only Napoleon during the Revolutionary and Napoleonic era we shall not be able to understand why it was that France, though a defeated nation, still held the balance of power after 1815. Of course we cannot at one sitting understand all European history since 1500, but we can grasp some of the main currents of events and subordinate the minor facts to their proper place.

Material for Study. Abundant material is provided in these volumes for the student who wishes to know the history of his own or any other country. The history of each nation is given in a subhead of the article upon that nation. These subdivisions contain numerous references to the histories of other nations, as well as to other articles upon important wars, battles, political events of sufficient importance to be known by distinctive names, such as Congress of Vienna, Barebones Parliament, and others; treaties; famous documents; temporary systems of government, such as the commonwealth and the directory; great institutions, such as the feudal system and chivalry, and important special periods, such as the Dark Ages, the Middle Ages, etc. Frequent reference is also made to the biographies of famous individuals, and in a few cases general discussions of the periods in which they lived are given under their names; this is true of Napoleon and Cromwell.

The history of the United States from the discovery of America is contained in a long article which forms a subdivision of the article *United States*. This is subdivided by periods and contains frequent references to a great many other articles, such as those upon battles and wars, famous laws, treaties, congresses, documents and organizations. Among these titles are such as the following: *The Alabama; Gettysburg, Battle of; Antietam, Battle of; Anti-Federalists; Bacon's Rebellion; Bering Sea Controversy; Black Friday; Bon Homme Richard; Boston Massacre; Charter Oak; Chinese Exclusion Act; Cincinnati, Society of The; Clayton-Bulwer Treaty; Wilmot Proviso; Spanish-American War; World War, etc.*

Under the name of each President are given the principal events of his administration. The article upon each of the states contains a brief history of the state. In general references and cross-references have

been inserted whenever possible in order that related subjects may be studied in their proper connection.

If the pupil and teacher both realize that history is more than a set of dates and names to be memorized, that they are studying the deeds and thoughts of people who lived as we live, that they are considering forces many of which are at work to-day, then the study of history will be fascinating. It will open our eyes not only to the past but to the present and future, for it is by seeing how other people have lived that we ourselves learn to live. The article on *HISTORY, METHODS OF TEACHING*, will be found of great value in enabling the pupil to understand the true purposes of instruction in history; its general suggestions and specific methods of teaching in the primary, intermediate and grammar grades, and the lists of books suited to the work of these grades will be of special assistance to the teacher or parent.

International Relations. No nation can live in "splendid isolation" from the rest of the world; it is inevitably affected by events with which it has no immediate relation. For example, the infant republic of the United States, from 1807 to 1812 had no direct interest in the great Napoleonic struggle, but diplomacy was frequently strained during that period. No one can understand the Jefferson and Madison administrations without knowing Western Europe of that period. Therefore, to acquire a clear knowledge of a country's history it is necessary to know what is the trend of events elsewhere.

Related Material. In addition these volumes contain biographies of the following men who have been writers of history.

Adams, Henry	Lodge, Henry C.
Bancroft, George	Lossing, Benson J.
Bancroft, Hubert H.	Macaulay, Thomas B.
Bede	McCarthy, Justin
Bourinot, John, Sir	McMaster, John B.
Bryce, George	Michelet, Jules
Bryce, James	Mommsen, Theodor
Buckle, Henry T.	Motley, John L.
Caesar, Caius Julius	Nepos, Cornelius
Eggleston, Edward	Parkman, Francis
Ferrero, Guglielmo	Plutarch
Flske, John	Prescott, William H.
Froissart, Jean	Ranke, Leopold von
Froude, James A.	Renan, Ernest
Gardiner, Samuel R.	Ridpath, John C.
Geoffrey of Monmouth	Ross, Alexander
Gibbon, Edward	Sallust
Green, John Richard	Tacitus, Publius
Guizot, F. P. G.	Cornelius
Hallam, Henry	Taine, Hippolyte A.
Hart, Albert B.	Thiers, Louis Adolphe
Herodotus	Thucydides
Hume, David	Thwaites, Reuben G.
Josephus, Flavius	Wilson, Woodrow
Lecky, William F. H.	Xenophon
Livy	



HISTORY, METHODS OF TEACHING. PURPOSES. The purposes of teaching history are:

1. To teach the facts of history so that the pupils will be well informed concerning the origin and growth of the country and the principles upon which the nation is established.

2. To stimulate patriotism. Patriotism may be considered as of two classes, military and civic. Of the former class there is no lack. The opportunity to join an army,

to engage in military parades and to go forth to war contains attractions that appeal strongly to young men, and whenever the country is imperiled by enemies, foreign or domestic, there are always thousands ready to rush to her defense.

Military patriotism needs little encouragement; it is not the sort that requires the greatest amount of attention on the part of the teacher. Civic patriotism is of a more quiet nature; yet it often requires the exercise of a moral heroism far greater than the physical courage required of the soldier. Civic patriotism includes all of those virtues that make the honest and upright citizen; the man who would not wrong another in business; who is careful and conscientious in the discharge of all of his political duties, and who is willing, if called upon, to accept public office and discharge his duties faithfully, because of his interest in the public welfare. Patriotism of this sort needs to be emphasized; nowhere can this be done to better advantage than in the history class.

3. To develop the minds of the pupils. History is a valuable study for the purpose of appealing to the imagination, exercising the memory and strengthening the reasoning powers. This last line of development, however, should be left largely to the work of the advanced grades; but the history stories suitable for the lower grades, both primary and intermediate, are remarkably well adapted to training the imagination and memory and to materially assisting the pupil in the development of language.

4. To train the judgment. History is far

from being a memory study. It presents a series of problems, each of which arises from certain causes and must be solved in accordance with certain conditions. In the discovery of these causes and conditions and the forming of conclusions by their comparison, there is afforded one of the best opportunities possible for training the reasoning powers. Since history is not an exact science, and since the causes and conditions are largely dependent upon human action, the problems to which they give rise are more various, more complex and more far-reaching than are the problems of mathematics and other exact sciences, and if history is properly taught in the grammar grades, it is one of the most valuable branches for training the reasoning powers.

5. To direct the reading of the pupils. The breadth of the subject requires extensive reading on the part of the pupils, if they would acquire a comprehensive knowledge of history. This reading cannot all be done while they are pursuing the work as provided by the course of study or during their period in the public schools, but the proper use of supplementary reading and careful direction by the teacher will lead most pupils to acquire a love for the reading of historic works, and this love once acquired, it will lead to the continuance of historic study after the work of the school is finished.

6. To strengthen character. The study of the lives and characters of the great leaders of our own and other nations never fails to exert an ennobling influence upon the pupils and to give them an inspiration to attain high ideals and to live pure lives. This is the most important of all the results to be obtained from this study. In short, all that has been said under *Purposes* can be summed up in this: The purpose of teaching history is to make good citizens.

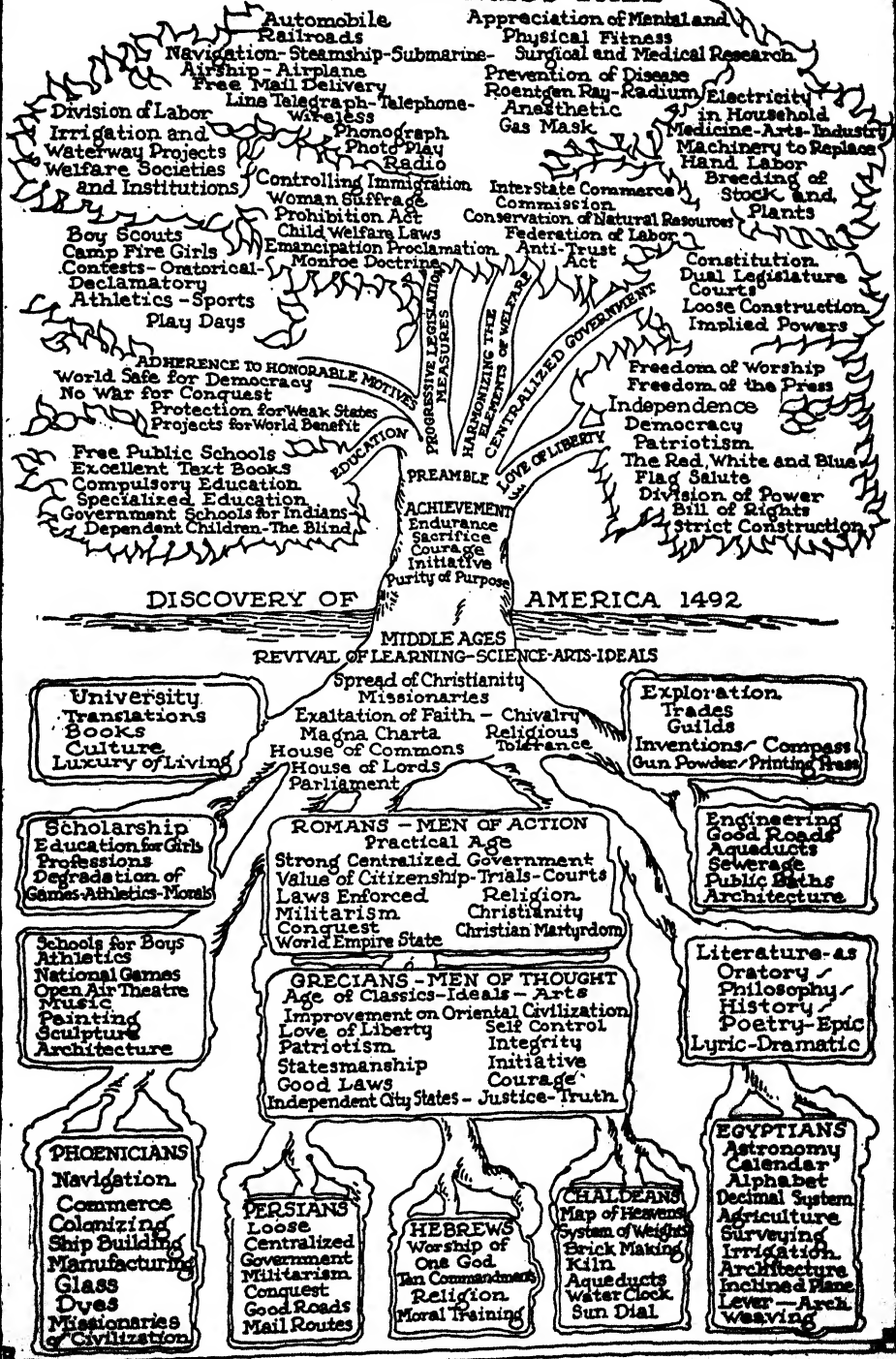
Preparation of the Teacher. In order that the above purposes may be attained, the teacher of history needs an adequate preparation for the work. This preparation should include:

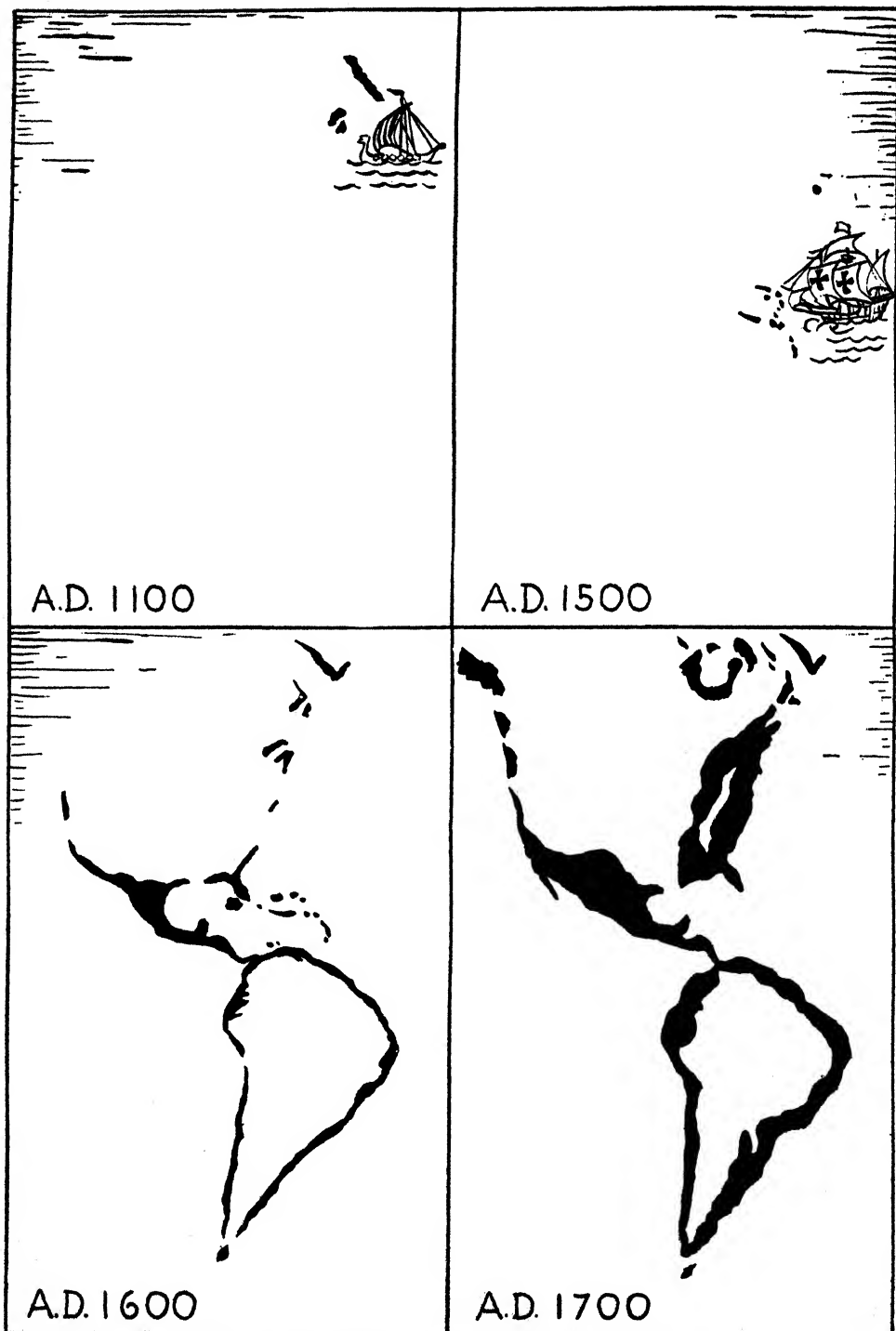
1. A thorough knowledge of the subject, including its relation to other subjects, and especially to geography.

2. A knowledge of the methods of teaching. See *METHODS OF TEACHING*.

3. Ability to direct pupils in their study of history, especially in the use of supple-

MODERN PROGRESS TREE





EUROPE'S FIRST GLIMPSES OF AMERICA

mentary matter, such as reference books and books for collateral reading.

4. Ability to present the subject in a clear, vivid and interesting manner. This preparation can be obtained in professional schools, such as normal schools and colleges, in a measure in the public schools, provided the pupil is under a good teacher, and in a great measure by self study. The knowledge of history that the teacher should have as a foundation for her work must far exceed a knowledge of the facts that she expects to teach, for without this extensive knowledge she will be unable to make a wise selection of facts or to present them properly:

The work in history in the public schools naturally divides itself into three groups, that of the primary grades, that of the intermediate grades and that of the grammar grades.

Primary Grades. The teaching of history in the first and second grades should be wholly oral and should consist of history stories. These may be biographies, which include the boyhood of eminent men, such as Washington, Lincoln and Columbus, or the stories of certain phases of history that the children can easily understand. These will include stories of exploration, such as a brief account of John Smith, including the settlement of Jamestown and the story of Pocahontas; stories of invention, such as the invention of the cotton gin and the steamboat, and accounts of the manners and customs of the early colonists. These stories should be told by the teacher and after they have been repeated two or three times, reviews should be conducted, in which the pupils should tell back to the teacher the stories to which they have listened. As far as possible, the children should tell the story in a connected form. This gives training in language as well as in history. In the preparation of these stories the teacher should use care to keep them within the capacity of the pupils, to present them in such a way as to make them attractive and to enable the pupils to understand fully everything that is narrated. In order that this may be done, the teacher should prepare the story with a view to the facts that will be presented, to the language that is to be used and to the time required. Young children will listen to a vivid account for eight or ten minutes, but when the account is prolonged beyond this time many of them become inattentive; hence the story should be short and pointed.

In the third grade the stories told by the teacher should be supplemented by reading on the part of the pupils. If it is impossible to procure books for the pupils to read, the teacher should read from such suitable books as she can obtain. A good illustration of the class of books valuable for pupils of this grade is found in the following list: Edward Eggleston's *Stories of Great Americans for Little Americans* and *Stories of American Life and Adventure*; Mary Hall Husted's *Stories of Indian Children* and Annie Chase's *Children of the Wigwam*. Among biographies valuable for this grade are found Jesse R. Smith's *Life of Washington*; James Baldwin's *Benjamin Franklin*, also his *Stories of Great Americans*; Frances Perry's *Four American Inventors*, and Anna Holman Burton's *Four American Patriots*. These are fair samples of a large number of books now easily obtainable.

All through these grades the pupils should be taught sentiments of a patriotic nature, including patriotic songs and extracts from such poems as *The Landing of the Pilgrims* and *The Building of the Ship*. In the selection of subject-matter for this work the teacher should be guided almost entirely by the capacity of the pupils, since in grades having a large percentage of children of foreign extraction who are not familiar with English, memory gems can scarcely be attempted before the latter part of the second year.

Intermediate Grades. The work of the intermediate grades is a continuation of that in the first three grades. To the stories told by the teacher there should be added more or less systematic reading of history by the pupils. Such books as Edward Eggleston's *First Book in American History* and Mowry's *First Steps in the History of Our Country* are valuable for systematic reading in these grades. The pupils should also be encouraged to read biographies, provided they can be obtained. A good illustration of biographies suited to these grades is found in Elbridge S. Brooks's *Columbus, Franklin, Decatur and Grant*, and Louise Putnam's *Life of Abraham Lincoln*.

Thus far these suggestions have dealt only with American topics. In some schools it may be unwise to go beyond these, but whenever the capacity of the pupils and the work in the course of study will allow it, the children of the intermediate grades, especially of the fourth and fifth, should obtain

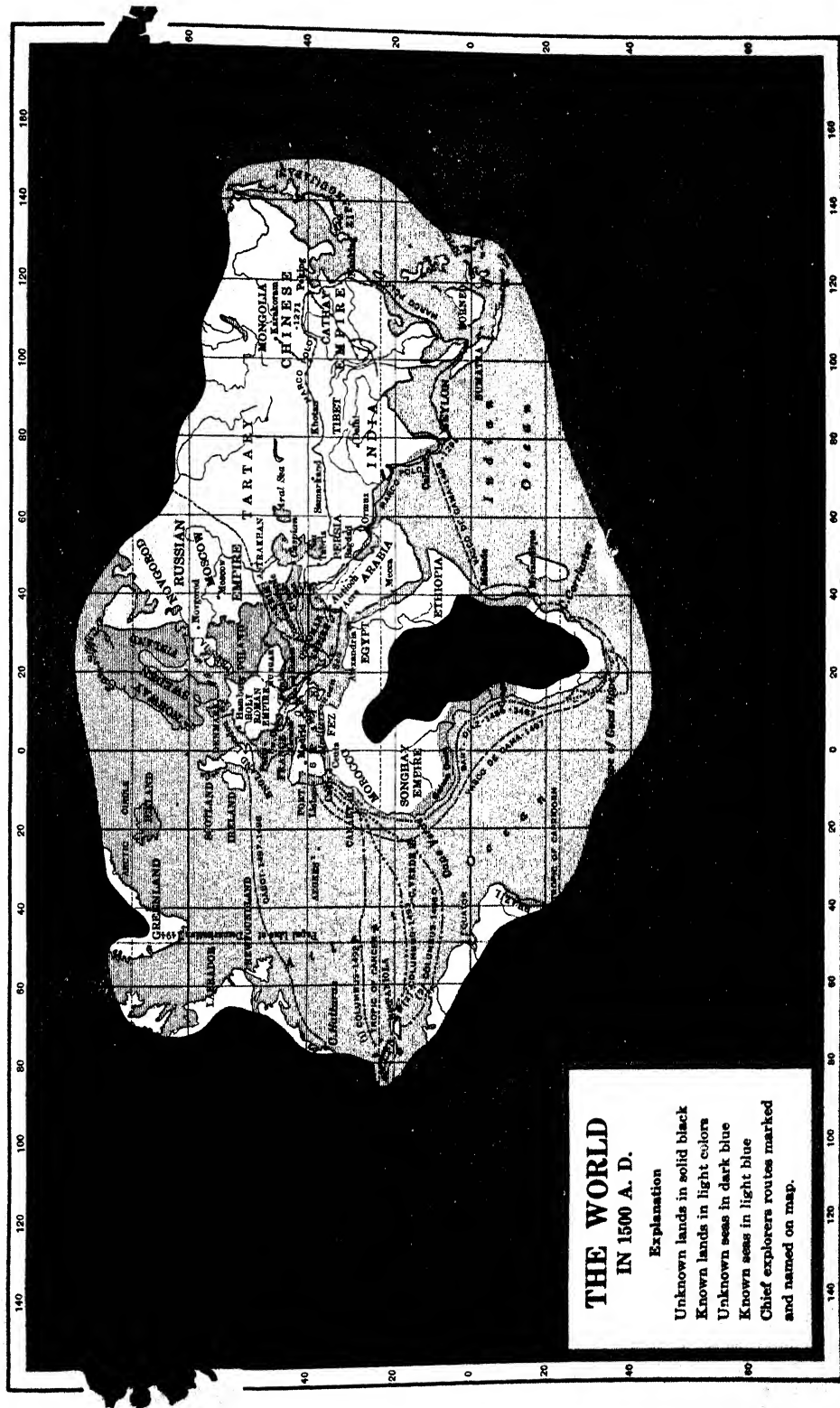
some knowledge of other people. If the pupils can obtain the books, they should read during this time the following and as many more as opportunity will permit: Jane Andrews's *Ten Boys on the Road from Long Ago to Now*, Guerber's *Story of the Greeks*, *Story of the Romans* and *Story of the Chosen People*. These are typical of a number of other works of similar nature, which can be used at this time to great advantage. The reading of this period should also include considerable biography, not only of Americans, but of the great men of other nations. Particularly suitable for these grades are Sarah Bolton's *Lives of Girls Who Became Famous* and *Lives of Poor Boys Who Became Famous*. Many other books of a like nature are easily obtainable, and in towns and cities school libraries are usually well supplied with material of this sort. If the pupils cannot obtain books, it is of great advantage in the history work for the teacher to possess them and read from them. The memory gems during this part of the work should be emphasized, and a large number of extracts from poems, orations and other utterances of public men should be memorized, care being taken to see that the pupils understand a selection before learning it.

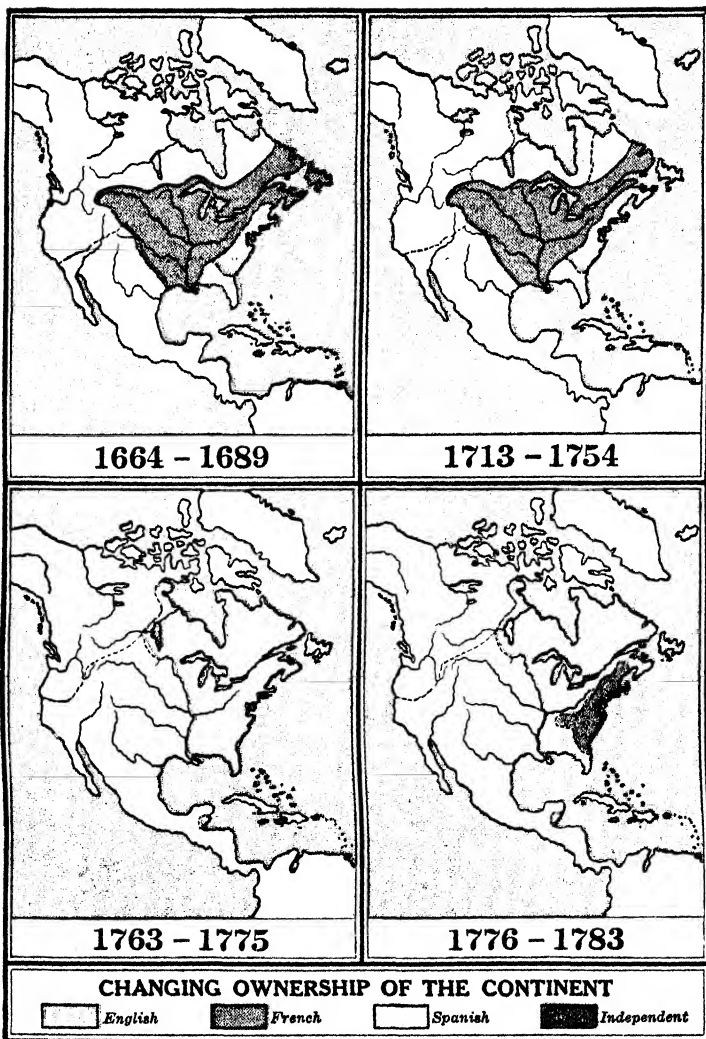
Grammar Grades. Text-books. The systematic study of history usually begins in the seventh or eighth grade, where the text-book is introduced, and it is at this point that the teacher frequently meets her greatest difficulty. The book should be carefully studied by the teacher, its plan ascertained and the difficult points discovered. This should be done before any work is begun with the class. When the teacher is familiar with these difficulties, she should plan her work so as to remove them as far as possible from the pupils. This can be done first by teaching the pupils how to study history from a text-book. A good plan is to use the book in class for a few lessons, asking the pupils to read and discuss the paragraphs assigned, pointing out to them in this way what they are expected to retain from their study. They should learn the facts and the relation of these facts to one another, but they should not attempt to commit the text to memory. Care should also be taken in the assignment of lessons so that the important paragraphs may be properly emphasized and the unimportant ones passed over lightly. In case

the advance lesson contains any point that the pupils will have difficulty in understanding, the matter should be explained at the time of the assignment of the lesson. If other works are to be consulted, specific directions for their reading should be given. These directions should often include the page and the paragraph of the work to which the pupils are referred. The teacher should so plan the recitation as to make the history appear a live subject. In this way the interest of the pupils will at once be secured and retained.

Cause and Effect. History is a logical sequence of events, each depending upon certain causes and becoming a cause upon which events that follow are based; therefore, history should be studied from the standpoint of cause and effect. In proceeding according to this plan, special emphasis should be placed upon the relation of geography to history. The teacher should lead the pupils to see that all great movements of history have rested upon geographic conditions and have been determined by them.

A good illustration is the relation of the geography of North America to its settlement by the English and French colonists. Why did the French penetrate so much farther inland and range over so much larger territory than the English, during the same period? Why did the English settle in compact communities, while the French failed to establish many settlements? The answer to these questions is based very largely upon the geographical conditions. The Saint Lawrence formed a waterway leading far inland, by means of which the Great Lakes and the Mississippi Valley were reached with comparative ease, while the barrier of the Appalachian Mountains was an obstruction that the English colonists could not overcome for more than a century. Again, the purpose that led to colonization by each of these nationalities was an important cause in determining their method of life in the New World. The English came because they wished to establish a home wherein they would be free from all restrictions in carrying out the form of worship that they believed to be true. The French were actuated by the desire to acquire wealth through trading with the Indians, and they could not do this successfully if they remained in settled communities and devoted their time to tilling the soil. All events are susceptible





of similar treatment, and the connection between cause and effect should never be overlooked.

Maps. Maps should be constantly used in connection with the text-book in history, and it is an advantage to the class if they have been used in the lower grades in connection with some of the narratives. It is a good plan to have the pupils construct the map as the study proceeds. When outline maps are used, this can be done without consuming much time, and it is of great assistance in enabling the pupils to understand the geographic relations.

Dates. Only the important dates should be memorized, such as the discovery of America by Columbus, the settlement of Jamestown, the landing of the Pilgrims, Braddock's expedition and the capture of Quebec by the English. The tendency is to have the pupils memorize too many dates, and this is liable to lead to confusion.

Outlines. The skilful teacher will either construct for her class or direct them in the construction of an outline of the subject as the study proceeds. These outlines should not be elaborate, but they should show the relation of one event to another, should include the dates to be memorized and should be so constructed as to form the basis of review lessons.

Government. The underlying principles of government should be taught in connection with the history in the eighth grade, and these should be discussed and explained as they are reached in the regular course of study, as the difference between the royal and proprietary governments in the colonies previous to the Revolution. The difference in political principles which arose between the colonies and Great Britain and finally led to the Revolutionary War should be thoroughly discussed, and so much of these principles as is necessary to give the pupils a clear understanding of the points at issue should be learned.

Wars. In the study of wars the causes leading to the war and the results arising from it are far more important than the military campaigns. The tendency has been to place too much stress upon campaigns and battles, consuming so much time in this branch of study that but little is left for the study of more important features. Historians now do not stress wars' details; they emphasize the arts of peace.

Outline of Methods of Teaching History

I. PURPOSES

- (1) To present facts in such a manner that the principles of growth and government of nations will be established
- (2) To stimulate patriotism
- (3) To develop the minds of pupils to imagine and grasp a situation
- (4) To train the judgment and reasoning powers
- (5) To direct the reading of pupils along supplementary lines and create a permanent choice for historical reading
- (6) To strengthen and develop character

II. PREPARATION OF THE TEACHER

- (1) A thorough knowledge of subject
- (2) A knowledge of methods of teaching
- (3) Ability to direct pupils in study
- (4) Ability to present subjects in an interesting manner

III. PRIMARY GRADES—FIRST, SECOND AND THIRD

- (1) History stories
- (2) Biographies of great men
- (3) Stories of exploration
- (4) Patriotic songs; literature

IV. INTERMEDIATE GRADES—FOURTH, FIFTH AND SIXTH

- (1) History stories
- (2) Biographies
- (3) Stories of travel
- (4) Memorizing patriotic songs and gems

V. GRAMMAR GRADES—SEVENTH AND EIGHTH

- (1) Text-books
- (2) Causes and effects
- (3) Maps
- (4) Outlines
- (5) Dates
- (6) Government
- (7) Wars

HITLER, ADOLF (1889—), an Austrian by birth who at the age of 43 became sole arbiter of the destinies of the German republic. He was born in the Austrian Tyrol; there he lived until the age of 21, when admiration for the German Empire led to abandonment of his homeland and settlement in Munich, there to engage in the study of architecture.

The World War wrought a tremendous change in his outlook. He joined the German army as a private soldier, fought through the four years of carnage, and was mustered out a corporal. After Germany was forced to sign the humiliating Treaty of Versailles, Hitler became a German citizen and turned his dynamic energies and gift of oratory toward persuading the people into militant resentment of their fate.

He organized a new political party called the National Socialists and began the publication of a newspaper to spread his doctrines. Radical changes in government were demanded; he derided democracy, declared for revision or annulment of the war treaty, and announced his opposition to Communism. With General Ludendorff, in 1923 Hitler inaugurated a revolution against the government, but it failed; the chief actor was sentenced to prison for five years, but was released within ten months.

With renewed energy he gave himself to the upbuilding of his National Socialist organization, whose members became known as Nazis. To the announced objects of the party Hitler added demands for the return of the lost colonies to Germany and declared enmity to the Jewish population of the Reich; he would make the German nation one of pure Aryan blood.

The growth of the National Socialist party was amazing. The Nazis organized after the manner of the Italian Fascists, with uniforms and emblems. By 1930 several million were enrolled; when the election for President occurred in 1932 Hitler received about fifteen million votes, and the leader was offered a post in the Cabinet, as representative of the majority party. Hitler declined the honor, with its set limitations of authority, but on January 30, 1933, on the death of the Chancellor, he succeeded to that post.

The Reichstag, pro-Hitler, granted the new leader four years of dictatorial power. With ruthlessness he swept aside everything that opposed his ambition to remake Germany

according to his design. The press was controlled, and enemies were punished; in midsummer of 1934 an unknown, but numerous, number of persons, high-placed in government or politics, were killed. Jews were subjected to indignities; their business relations were destroyed, and thousands (among them many eminent men) sought refuge abroad. An attempt to alter the fundamentals of the German Protestant religion did not succeed.

The death of President Hindenburg in midyear of 1934 enabled Hitler to consolidate all executive power in his own person. Without adopting the title of President, he assumed all the duties of that office.

HITTITES, descendants of Heth, who occupied part of the country lying between the Dead Sea and the Mediterranean from before the time of Abraham until 717 B. C., when they were conquered by Sargon. At one time a Hittite empire extended over a large area in Asia Minor and Syria, and it was intermittently at war with Egypt and Assyria. After they were conquered by the Assyrians, the Hittites lost their national identity.

HIVES, *hyvz*, an annoying disease which manifests itself in an eruption of white, swollen patches that turn red after the victim scratches them. These patches itch intolerably. The eruption appears and disappears with great suddenness; an attack is due to the presence in the blood of a substance poisonous to the victim. In most cases the poison is absorbed from the intestines, and the most effective remedy is to clean out the bowels and to diet. The poison most frequently present comes from an acid found in fish, milk, juicy meat and meats from carcasses containing much blood. Local applications of witch hazel or solution of baking soda will often relieve itching.

HOANG-HO or **HWANG-HO**, *kwakng'ho*, meaning *yellow river*, known since 1928 as the Hwang, is second only to the Yangtze among rivers in China. Rising high in Tibetan mountains, it winds a tortuous course in a generally easterly direction and reaches the Gulf of Pechili. Its length is estimated at about 2,600 miles, and it drains an area of probably 400,000 square miles. The Hwang is navigable only a short distance from its mouth. It derives its name from the vast quantities of yellow earth held in a state of solution by its waters. This dirt, being deposited, raises its bed to such an extent that it frequently overflows.

HOBART, TASMANIA, the capital and largest city, on the west shore of the Derwent River, twelve miles from the coast, with Mount Wellington as a fine background. The most noteworthy buildings are the government house, a town hall, two cathedrals, a public library, the parliament buildings, a royal theater and a museum and art gallery. The University of Tasmania is located here. The town is the center of a large trade, its exports being mainly of fruit, hops, grain, timber, minerals and wool. The main industries are flour-milling, tanning and woolen manufacturing. Population, 1933, 60,408.

HOBBEEMA, *hob'e mah*, MEINDELT (1638-1709), one of the foremost landscape painters of the Dutch school. The place of his birth is unknown, but he spent most of his life at Amsterdam, where he probably studied under Ruysdael. During his lifetime his work was not appreciated, but since his death he has been ranked by critics second only to Ruysdael among Dutch landscape painters. Hobbeema differed from Ruysdael in choosing as subjects the gentler aspects of nature, such as woodland scenes and quiet pools. In technical skill he probably excelled Ruysdael. His colors are rich and transparent and depict with especial brilliancy the beautiful effects of sunlight. Among his famous paintings are *The Water Mill*, in the Glasgow Gallery; *The Avenue near Middelharnis* (Holland), in the National Gallery, London, and *The Ruins of Brederode Castle*, also in the National Gallery.

HOBBS, *hobz*, JOHN OLIVER. See CRAIGIE, PEARL RICHARDS.

HO'BOKEN, N. J., in Hudson County, on the Hudson River, adjoining Jersey City on the south, opposite the lower part of New York City, with which it is connected by the Hudson River tunnels, several ferries, and (by way of Jersey City) a vehicular tunnel. It is the eastern terminus of the Delaware, Lackawanna & Western railroad, and is also served for freight by the Erie, Pennsylvania, Lehigh and other lines. Hoboken is a great center for shipping, especially of coal, and is the American terminus of many important trans-atlantic steamship lines. Its water-front is lined with large docks and piers, accommodating the greatest ocean passenger and freight vessels.

Among the city's many and important industries are manufactures of machine-shop products, automobile accessories, ma-

rine engines, leather, drawing and surveying materials, inks, chemicals, buttons and silk. On an elevation called Castle Point, 100 feet above water level, is located Stevens Institute of Technology, named for John Stevens, the founder of the city, one of the country's leading schools of its kind.

The town was first called Hobocan Hackling, and was a part of the patroonship granted to Marco Pauw in 1630. A house was built about ten years later, and a sparse settlement grew up. The present city really dates from 1804, when John Stevens, "the founder of Hoboken," bought the land and laid out the town. It was incorporated in 1849. Population, 1920, 68,166; in 1930, 59,261, a loss of 13 per cent.

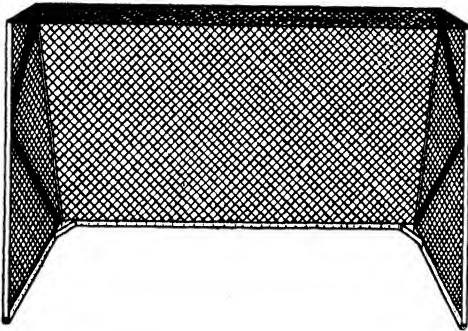
HOBSON, RICHMOND PEARSON (1870-1937), an American naval officer, who won fame by a daring exploit in the Spanish-American War. He was born at Greensboro, Ala., and was graduated from the United States Naval Academy at Annapolis in 1889. At the opening of the Spanish-American War he was with Admiral Sampson's fleet. After the Spanish squadron was located in the harbor of Santiago Lieutenant Hobson conceived the plan of sinking a ship in the narrow entrance to the harbor and thus preventing the escape of the fleet. With seven companions he took the collier *Merrimac* into the entrance of the harbor on Friday morning, June 3, 1898, and sunk the boat in the channel, but did not accomplish the desired result. He was picked up by a Spanish boat and retained as prisoner of war until exchanged a few weeks later. After the war he was sent as a naval constructor to the Philippines. In 1903 he resigned from the navy. Five years later he was elected to the House of Representatives from Alabama, and was reelected in 1910 and 1912. He was for several years engaged in lecturing and writing in behalf of naval preparedness and international peace.

HOCK'EY, or **SHINNEY**, a ball game in which each player is armed with a *hockey*, or *shinney stick*, with which he tries to drive a small ball, or *puck*, through the team of his opponents to their goal line. It is a national sport of Canada.

In North America the development of the game is due chiefly to the Victoria Hockey Club and McGill University and to other clubs co-operating with them. About 1881 the first attempts were made to draw up a

recognized set of rules. Three years later the first general tournament was held, and in 1887, the "Amateur Hockey Association of Canada" was formed. Soon afterwards the efforts of several Canadian teams resulted in the spread of the game to the northern sections of the United States, where it has become fully as popular as in the Dominion. The "Canadian Amateur Athletic League" has jurisdiction over the numerous Canadian hockey clubs and the American Amateur Hockey League has a similar position in the United States. The emblem of supremacy among the Canadian leagues is the Stanley Cup, presented by Lord Stanley, once governor-general of Canada.

Method of Play. The game should be played on a rink at least 112 feet long by 56 feet wide. The goals should be 6 feet



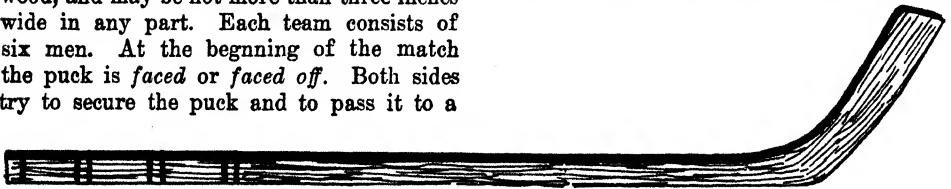
wide and 4 feet high and should be provided with nets like the lacrosse goal. The puck is a flat round piece of vulcanized rubber, one inch thick and three inches in diameter. The sticks are made of one piece of hard wood, and may be not more than three inches wide in any part. Each team consists of six men. At the beginning of the match the puck is *faced* or *faced off*. Both sides try to secure the puck and to pass it to a

one of the fastest of all games. At one moment the puck may be at one end, and then thirty seconds later a goal may be scored at the other end. Aside from the work of the offense, the goal-keeper has probably the most responsible position. A good goal will save his side from many a defeat even though his mates may be weaker in other parts of the game. Hockey offers considerable opportunity for individual effort, but the best results are obtained when the individual is subordinated to the team and consistent team-work is developed.

HOE, RICHARD MARSH (1812-1886), an American inventor, who gave a wonderful impetus to the business of newspaper publishing, was born in New York City. He was the inventor of the rotary printing press, having introduced in 1846 the Hoe Lightning Press. Later he and his brother invented the web-perfecting press, now in general use in the printing of newspapers. See *NEWSPAPER; PRINTING PRESS*.

HOFMANN, hof'e mahn, HEINRICH (1824-1902), a German painter, born in Darmstadt. He studied at Düsseldorf, and in the Antwerp Academy. After traveling in Italy he settled in Dresden in 1862, and became professor in the Academy. Although his subjects cover a wide field, the great majority of his admirers know him only through his scenes in the life of Christ. The most popular of these pictures are *Christ Taken Prisoner*, *Christ in the Temple* and *Christ's Sermon on Lake Gennesaret*.

HOFMANN, JOSEF (1877-), one of the world's greatest pianists, was born at Cracow, Poland. His father began teaching



HOCKEY STICK

point from which a goal may be shot. The two centers then face off again and play continues as before. A game generally consists of two periods of twenty or thirty minutes each; in case of a tie an additional period is played.

Ice hockey requires good skaters, as speed and sureness are the essentials of a good hockey player. Because of the speed with which skaters can cover a rink, hockey is

him music when he was little more than an infant and then put him under Rubenstein. The boy began his public career at the age of six, and when nine years old made a concert tour of Europe. He was then taken to America, where fifty-two concerts were arranged for him in two and a half months. He showed signs of breaking under the strain, and the Society for the Prevention of Cruelty to Children was moved to pro-

test. Hofmann did not appear in public again until 1894; since then he has delighted both Europe and America with performances of his own compositions and scholarly interpretations of the great masters.

HOG, a common domestic animal, belonging to the same family as the boar. It is one of the most valuable of farm animals, and also one of the ugliest. The head is prolonged into a pointed or blunted snout, the skin is very thick, is mostly covered with stiff bristles, and the body is clumsily formed. Hogs are black, red, spotted and yellowish-white in color. The creatures are omnivorous in habits, that is, they devour almost any vegetable or animal substance. The hog is also prolific, having two litters in a year, an average litter consisting of nine young.

Its flesh, known as *pork*, forms a material part of the food of mankind, though Jews are strictly enjoined not to eat it, and Mohammedans agree in this prohibition. Pork takes salt better than almost any other meat, and hence it forms an important article in military and naval stores. The lard of the hog is used in a variety of preparations, and the bristles are used in large quantities in the manufacture of brushes, while the skin, when tanned, is used by saddlers and bookbinders.

The hog is erroneously looked on as a peculiarly stupid and gluttonous animal; it has also an undeserved reputation for filthy habits, but the too common filthiness of pigsties is more the fault of the owner than the tenant. It wallows in the mire, but this is a peculiarity of all animals having a thick skin, and they do it to cool themselves and provide a protection against insects. The wild boar, from which most of our domesticated varieties are derived, is found in most parts of Europe and Asia. In size the wild animal considerably exceeds the domesticated hog; the legs are longer and more muscular, and the back is therefore much higher.

Related Articles. Consult the following titles for additional information:

Lard	Meat Packing
Meat	Pork

HOGGARTH, WILLIAM (1697-1764), a celebrated English pictorial satirist, whose paintings and engravings picturing the follies and vices of his time are masterpieces. He was born in London, and began his career as a silversmith. His ambition was to be a line engraver, but in 1724 he began the study of painting and succeeded better as painter

than as engraver. Some of his best work is in series, such as *Marriage à la Mode*, six pictures now in the National Gallery, London; other series are *The Harlot's Progress* and *Industry and Idleness*. His most important designs for engravings are *Masquerades* and *Operas* and illustrations for Butler's *Hudibras*. He painted a number of portraits, the most popular being that of himself with his dog. There are in England many private and public collections of his work.

HOGS'HEAD, an obsolete measure of capacity in the English system, containing 63 old wine gallons or 52½ imperial gallons. It varied in different times and places and for different substances. For beer it was 54 gallons, for rum, 40 to 50 gallons, for brandy, 45 to 60 gallons. In the United States, the measure is yet sometimes employed, and is equivalent to 63 American gallons or 52.485 imperial gallons.

HOHENSTAUFEN, *ho'en stowfen*, the dynasty which ruled Germany from 1138 to 1254. The first of the House was Conrad III, who came to the throne on the death of Lothair of Saxony. The other kings of the line were Frederick I, Barbarossa; Henry VI; Otho IV; Frederick II, and Conrad IV, whose death in 1254 brought the rule of the House of Hohenstaufen to an end. The Hohenstaufens were, for the most part, strong kings, and the imperial title was with them something more than a name. The two Fredericks were among the most remarkable of medieval sovereigns.

HOHENZOLLERN, *ho'en tsohl urn*, the family name of the royal house of Prussia from the twelfth century to November 28, 1918. After 1871 the reigning member was also German emperor. The identity of the first Hohenzollern is not a matter of definite record, but the family name was derived from the Castle Zollern, or Hohenzollern, in medieval Swabia, or Suabia, which in turn took its name from the Suevi, as the Germanic people of the third century were called. The third German emperor of the Hohenzollern line was William II, who, though he had six sons to assure the succession and perpetuity of the house, was forced, by the defeat of the German arms in the World War, to give up the throne, and to see the rise of a German republic.

Among the famous men of the line were Frederick William, the Great Elector; Frederick II, called Frederick the Great; William

I, under whom Bismarck fashioned the German Empire, and William II, his grandson. With notable exceptions the Hohenzollerns were strongly militaristic, and believed in the "divine right of kings." Frederick III, the father of William II, was one of the mildest and most democratic representatives of the family, but he ruled only three months.

William II, in contrast to his father, was anti-democratic in his political philosophy, and sought to strengthen his throne by building up a great army and navy. When defeat overtook the German army in the World War, William fled to Holland.

William's six sons and their families remained in Germany, and in their several ways took part in the reorganization of the country under the new régime.

Related Articles. Consult the following titles for additional information:

Frederick II	Germany (History)
Frederick III	William I
Frederick William	William II

HOLBEIN, *hohl'bine*, the name of two celebrated German painters, father and son, both born at Augsburg.

Hans Holbein, the Elder (1460-1524), who painted numerous Biblical scenes, worked at Basel, Ulm and Frankfort. His style shows the influence of both the Flemish and Italian masters. Among the sacred legendary and historical subjects he depicted were *Virgin and Child, Enthroned with Angels, The Nativity, Coronation of the Virgin, The Last Supper, The Crucifixion* and *The Entombment*. He also depicted several scenes in the lives of the saints.

Hans Holbein, the Younger (1497-1543), was a son of the preceding. His youth was spent in Basel and his later life in England, to which country he went at the beginning of the Reformation, having procured through his friend Erasmus the patronage of the chancellor, Sir Thomas More. He was appointed court painter by Henry VIII. In the Windsor collection he left portraits of all the eminent Englishmen of the time. The most celebrated of his pictures is the *Madonna of the Burgomaster Meyer* at Darmstadt. Other works are *Passion Scenes, The Ambassadors* and various excellent portraits.

HOLDEN, EDWARD SINGLETON (1846-1914), an American astronomer, born at Saint Louis, Mo., and educated at Washington University and the United States Military Academy. After eight years as professor of mathematics at the naval academy and four

years as director of the Washburn Observatory at Madison, Wis., Holden became president of the University of California in 1885 and later director of the Lick Observatory on Mount Hamilton in California. Here, surrounded by all the conveniences which modern science could furnish, he did his most important work. Among his writings are an *Index Catalogue of the Nebulae, A Life of Sir William Herschel, an Astronomy* (with Newcomb) and *Essays in Astronomy*.

HOLIDAY, any day set apart as a religious or secular festival, observed either nationally, by states or provinces, or locally. In a general sense it is a day during which a person is released from his every-day labors, with the expectation that to some degree, at least, he shall center his thought and actions upon the event which the occasion commemorates. In the United States the principal holidays are New Year's Day, Washington's Birthday, Decoration Day, the Fourth of July, Labor Day, Thanksgiving Day and Christmas, but nearly every state has its particular holidays. There is no national legal holiday in the United States, each state controlling this matter for itself.

In Canada the statutory holidays are Sunday, New Year's Day, Christmas, Empire Day (May 24), Dominion Day (July 1), and Labor Day (the first Monday in September).

HOLLAND, JOHN PHILLIP (1842-1914), an Irish-American inventor whose name is connected with the perfection of the submarine. He was born and raised in Ireland, where he became imbued with a deep hatred for England. During the American Civil War, while teaching in Cork, he read about the battle between the *Monitor* and the *Merrimac*, and determined to invent a device which could destroy the warship of the future, the iron-clad battleship. To him, this seemed the only way to overcome England's supremacy on the sea.

Then began a period of experiments. Holland succeeded in building a submarine for the Fenians, but it was never used. In 1898, over twenty years afterward, he completed a submarine for the United States government, fifty feet in length and equipped with one torpedo tube. All of the nations later modeled their submarines after the pattern of the Holland boat, and this holds true for those of the largest dimensions (see SUBMARINE). The inventor of this remarkable war machine died in poverty.

HOLLAND, JOSIAH GILBERT (1819-1881), an American author and editor. In 1844 he was graduated at the Berkshire Medical College, but he never practiced. At the age of thirty he connected himself with the Springfield *Republican*, and as he exhibited a remarkable aptitude for journalism, the paper soon became vastly popular. In 1870 he founded *Scribner's Monthly*, which, under another ownership, is now the Century Magazine. Among Holland's books, many of which became very popular, are the novels *Nicholas Minturn* and *Arthur Bonnicastle* and the poems *Bittersweet*, *Kathrina* and *Garnered Sheaves*.

HOLLAND, KINGDOM OF. See NETHERLANDS, THE.

HOLLAND, MICH., in Ottawa County, twenty-five miles southwest of Grand Rapids, on the Pere Marquette Railroad, and at the head of Black Lake, which affords a good harbor. There are daily boats to Chicago during the season of navigation. It is in an agricultural region. The industries include manufactures of furniture, furnaces, foodstuffs, shoes, machinery, drugs, and novelties. There are about 100 acres in parks, and the city has an airport. The place was settled by the Dutch in 1847, and the present inhabitants are largely of Dutch descent. It is the seat of Hope College and of the Western Theological Seminary, both under the Reformed Church. A number of summer resorts are situated near the city, on Black Lake. Population, 1920, 12,166; in 1930, 14,346.

HOLLEY, MARIETTA (1850-1926), writer of humorous stories centering about "Samantha" and "Josiah Allen's Wife." Her books are over a dozen in number; the latest are *Samantha on the Woman Question* and *Josiah Allen on the Woman Question*.

HOLLY, a genus of plants embracing a number of evergreen trees or shrubs; it is forever associated with the celebration of Christmas, when holly branches and berries are a universal decoration. The common European holly is a handsome, conical evergreen tree, growing to the height of twenty or thirty feet. Its leaves are dark green, shining and leathery, abundantly armed with prickles on the lower branches, but free from them on the upper branches and on very old trees. The contrast between holly and its surroundings is thus set forth by Southey, in *The Holly-Tree*:

And as, when all the summer trees are seen
So bright and green,
The Holly leaves a sober hue display
Less bright than they,
But when the bare and wintry woods we see,
What then so cheerful as the Holly-tree?

The flowers are white, appearing in May; the fruit is red, ripening in September and remaining on the tree all winter. A good many varieties are known, distinguished by the shape and color of the leaves, which are sometimes spotted or edged with yellow. Holly is excellently adapted for hedges and fences, as it bears clipping. The wood is hard and white and is employed for turnery work, knife handles and similar articles. Among the Romans it was customary to send boughs of holly to friends with new year's gifts, as emblematic of good wishes. The American holly is widely spread throughout the United States and Southern Canada, especially in British Columbia.

HOLLYHOCK, a biennial plant of the mallow family, native of China, but introduced into almost all countries. It is chosen as an ornament of gardens. There are many varieties, with single and double flowers, showing tints of yellow, red, purple and dark purple, approaching to black. Some of the double blossoms are among the most beautiful of flowers. Hollyhocks grow to the height of eight feet or more. Growers should guard against a fungous growth which attacks the leaves of the plant.

HOLMES, ELIAS BURTON (1870-), an American traveler and lecturer, born in Chicago. Photography and travel interested him keenly when he was yet almost a boy, and at the age of twenty he lectured before the Chicago Camera Club on the subject *Through Europe With a Camera*. This was the beginning of a long period of travel, picture taking, and subsequent lectures in large cities of the United States. He has visited every quarter of the globe, and his pictures, which represent the highest development of photography, portray most vividly the manners and customs of various peoples and the physical features of the countries visited. He shows both still and moving pictures, and his travelogues are always educational and interesting. Six or eight months of the year are devoted to travel, and the rest of the season to lecturing. His lectures have been published under the title *Burton Holmes Travelogues*.

HOLMES, OLIVER WENDELL (1809-1894), an American essayist, poet, and novelist, a contemporary of Longfellow, Lowell, Emerson and the others of that famous group of New England writers. He was one of the wittiest of them all, and his *Autocrat of the Breakfast Table* series is perhaps as original a creation as can be found in American literature.

Holmes was born at Cambridge, Mass. During his early years he spent much time in his father's library, and the great quantity of fragmentary reading which he did "in books rather than through them," as he himself said, had a marked effect on the writings of his later life. He was graduated from Harvard in 1829, in the class which he himself made famous in later years by his yearly poems at the reunions. After studying law for a time, he turned to medicine, at first with little seriousness. He became deeply interested, however, and the years during which he studied medicine in Paris were most industriously spent. His degree of M. D. was received in 1836, and he settled down to practice medicine in his loved city of Boston, where he remained for the rest of his life.

While still in college, Holmes had written numerous poems which, while they were not of the highest order of merit, included such popular and humorous poems as *The Spectre Pig* and *The Height of the Ridiculous*; he had also won a taste of fame by the publication of *Old Ironsides* in the year following his graduation from Harvard. The stirring rhythm of this fine poem is shown in the following stanzas:

 Ay, tear her tattered ensign down!

 Long has it waved on high,

And many an eye has danced to see

 That banner in the sky;

Beneath it rung the battle shout,

And burst the cannon's roar;—

The meteor of the ocean air

 Shall sweep the clouds no more!

O better that her shattered bulk

 Should sink beneath the wave;

Her thunders shook the mighty deep,

And there should be her grave;

Nail to the mast her holy flag,

 Set every threadbare sail,

And give her to the god of storms,

 The lightning and the gale!

The wide popularity of the poem and the feeling it aroused throughout the country had the effect of compelling the Secretary of the

Navy to countermand the order for the destruction of the famous frigate *Constitution* (which see).

It was not until 1836 that Holmes published his first book of poems. He realized that the appearance of a volume of poetry in the same year that he started in to practice medicine would probably have a most unfavorable effect on his practice, as people might hesitate somewhat before applying to a poet for prescriptions. His heart was set, however, on a literary career, even more than on a medical, and he was willing to sacrifice something for it. In 1839 he was given a position as lecturer in Dartmouth College, and in 1847 gave up his practice entirely and became professor of anatomy at the Harvard Medical School, a position he filled until 1882. Meanwhile, in 1840, he had married Amelia Lee Jackson, with whom his life was most happy. Various medical papers, some of which were of great importance in the profession, came from Holmes's pen from time to time, and his poems written to celebrate every special occasion in Boston had made him locally famous as a wit.

It was not until the founding of the *Atlantic Monthly*, in 1857, however, that Holmes became widely famous. To this newly-founded magazine he contributed his papers known as the *Autocrat of the Breakfast Table*, which are up to the present day considered his masterpiece. It is simply talk in print, and this means a great deal when the talker is as brilliant and easy a conversationalist as was Doctor Holmes. This first series was followed by *The Professor of the Breakfast Table* and later by *The Poet at the Breakfast Table*. Three novels, *Elsie Venner*, *The Guardian Angel* and *A Mortal Antipathy*, are studies in hereditary tendencies, but the first has many elements of a good story. After a visit to Europe in 1886 appeared *Our Hundred Days in Europe*, and when Holmes was eighty, he wrote a final autocrat series under the title of *Over the Teacups*. This last possesses little of the spontaneous charm of his earlier writings, but is interesting as showing the change in his conversational methods and powers.

Among Holmes's best poems may be mentioned *The Chambered Nautilus*, *The Last Leaf* and the widely-known *Wonderful One-Hoss Shay*. Whether it is as poet or a prose writer that Holmes is considered, it is the same qualities, his sprightliness, his geniality, his absolute sanity and his power of combin-

ing wit and pathos, which stand out most prominently, and these are the same qualities which in his own generation made Doctor Holmes the most popular of men. For other details, see the article **READING**.

HOLMES, *hohms*, OLIVER WENDELL, JR. (1841-1935), an American jurist, born at Boston, the son of Oliver Wendell Holmes, the poet. He was graduated at Harvard and from Harvard Law School, served for two years in the Civil War, taking part in the battles of Ball's Bluff, Antietam and Fredericksburg, and then engaged in law practice in Boston, where he became editor of the *American Law Review*. In 1882, he was appointed professor of law in Harvard Law School. In the same year he was nominated associate justice, and in 1899 chief justice, of the state supreme court. From 1902, when appointed by President Roosevelt, until 1932, he was Associate Justice of the Supreme Court of the United States. He wrote several books on law, and edited an edition of Kent's *Commentaries*.

HOLY ALLI'ANCE, a misnamed league formed at Paris in September, 1815, between Alexander I of Russia, Francis of Austria and Frederick William III of Prussia. It consisted of a declaration, that, in accordance with the gospel of Jesus Christ, the principles of justice, charity and peace should be the basis of their internal administration and of their international relations, and that the happiness and religious welfare of their subjects should be their great object. Its real aim, however, was to maintain the power and influence of the existing dynasties, and Metternich, the Austrian minister, gradually obtained the chief authority. It exerted no influence after 1848.

HOLY CITY, a term commonly applied to Rome, because it is the seat of the Roman Catholic Church and the residence of the Pope. However, it is properly applied to any city which is the center of a great religion. Thus, Mecca and Medina are holy cities to the Mohammedan; Benares, to the Hindu; Jerusalem, to the Christian masses; Moscow, to the member of the Greek Church.

HOLY FAMILY, the representations in art of the Virgin Mary and the Infant Jesus. In the sixth century artists of Byzantium (Constantinople) began representing the Christ-child seated in the lap of the Virgin, one hand raised in an attitude of blessing. The artists of the later Middle Ages intro-

duced other figures—Saint Anna, the mother of Mary, Saint Joseph, Saint John as an infant, and Saint Catherine. Some of the early pictures of the Holy Family were believed to possess miraculous healing powers. The Virgin and Child constituted the favorite subject of the supreme masters of the Renaissance. At various times the two have been pictured with earthly or with celestial attendants. See **MADONNA**.

HOLY GHOST, in Christian theology, the third person of the Trinity, the others being God the Father and Christ the Son. The term is used interchangeably with *Holy Spirit*. See **TRINITY**.

HOLY GRAIL. See **GRAIL**, **THE HOLY**.

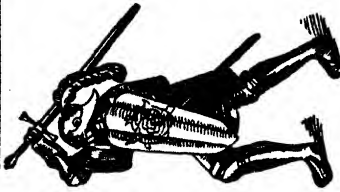
HOLY LAND. See **PALESTINE**.

HOLYOKE, *hole'yoke*, MASS., in Hampden County, eight miles north of Springfield, on the Connecticut River and on the Boston & Maine and the New York, New Haven & Hartford railroads. The city has the advantage of an unusual supply of water power provided by the great granite dam, 1,000 feet long, which gives the river a fall of sixty feet. This supplies power for the great paper mills for which the city is world-famous, also for mills making stationery, satins and taffetas, thread, silk, machinery, power pumps and other articles. Industrially Holyoke takes high rank among New England cities.

In the vicinity of Holyoke are many points of scenic interest—Mt. Tom and Mount Holyoke, reached by electric railways. Within a few miles of the city are several noted colleges, including Amherst, Smith and Mount Holyoke. The city was part of West Springfield from 1786 to 1850, and in 1873 it was chartered as a city. Population, 1930, 56,537.

HOLY ROMAN EMPIRE, the name given to the State created by Charlemagne, the assumption being that it was a development of the old Western Empire and that Charlemagne was the successor of the Roman emperors. The events connected with its history prompted Voltaire, centuries later, to say it was "neither holy, nor Roman, nor an empire." The title *Roman Empire* was first used in 962, when Otho the Great was crowned by the pope, and the word *Holy* was added by Frederick Barbarossa. In theory, all of the Christian countries of western Europe formed part of the Holy Roman Empire, but in reality only Italy and those

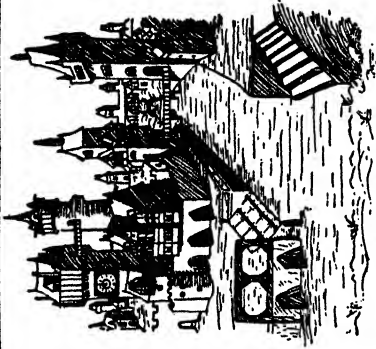
THE HOLY ROMAN EMPIRE



FIFTEENTH CENTURY KNIGHT
IN FULL ARMOR



OFFICER'S UNIFORM, 1790.



MEDIEVAL TOWN
(from a drawing of 1490)



COSTUME OF GERMAN
EMPEROR, 13th CENTURY



THE HOLY
ROMAN EMPIRE, about 1520



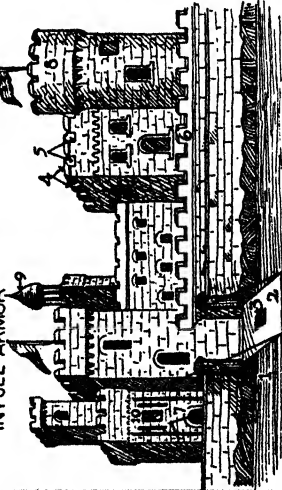
WOMAN'S HEADRESS



HELMETS

Chronological Summary

Otto the Great Crowned Emperor.....	962
Division of Greek and Latin Churches.....	1054
House of Hohenstaufen.....	1138-1254
Accession of Frederick Barbarossa.....	1152
Great Interregnum.....	1254-1273
Hussite War.....	1419-1433
House of Hapsburg.....	1438-1804
Accession of Maria Theresa.....	1740
Title Abandoned.....	1804



MEDIEVAL CASTLE

- 1 Moat
- 2 Drawbridge
- 3 Wicket
- 4 Merlions
- 5 Embasures
- 6 Rampart
- 7 Portcullis
- 8 Donjon or Keep
- 9 Tower
- 10 Escutcheon

countries which acknowledged the superiority of the king of Germany belonged to it. The Hohenstaufen emperors possessed something like imperial power, because they were strong monarchs individually, but after their time the term came gradually to be merely an honorary title. In 1804 Francis II took the title of *Emperor of Austria*, and two years later he gave up that of Holy Roman Emperor.

HOLY SPIRIT PLANT, an orchid of Central America, known, also, as the *Dove Plant*, from the resemblance of the united stamens and pistils of the flower to a dove hovering with expanded wings, somewhat like the conventional dove seen in artistic representations of the Holy Ghost. The round, sweet-scented flowers are a creamy white, dotted with lilac on the base of the lip, and are borne in a spike.

HOLY WATER, in the Roman Catholic Church, water which has been blessed by a priest for religious uses. It is sprinkled on the worshipers and the things used in the church and is employed at funerals and other special services.

HOLY WEEK, the week immediately preceding Easter, when Christian churches commemorate the last days of Christ on earth. In Roman Catholic and Anglican churches Holy Week is solemnized by prayer and fasting. The celebration begins with Palm Sunday, the Sunday before Easter, commemorating Christ's triumphal entry into Jerusalem. In the course of the week special services are held on Wednesday (Spy Wednesday), the day of Judas' betrayal; on Thursday, the day of the Last Supper; and on Good Friday, the day of the Savior's crucifixion.

HOMAGE, *hom'aje*, in feudal law, a formal acknowledgment and acceptance of the duties of a vassal, made by a feudal tenant to his lord. The tenant, being ungirt and uncovered, kneeled and held up both hands between those of the lord and there professed himself to be his lord's vassal. He then received a kiss from the lord. See **FEUDAL SYSTEM**.

HOMEOPATHY, *ho me op'a thi*, the name of a system of medicine introduced by Samuel Hahnemann of Leipzig. It is a system founded upon the belief that drugs which will produce certain symptoms in a healthy person will cure a sick person who has developed the same symptoms. It exemplifies

the old belief long ago expressed in the Latin phrase, *similia similibus curantur* (like is cured by like). Strong and bitter medicines are not tolerated in homeopathic practice; simpler remedies, usually pleasant to the taste, are substituted, and homeopathy therefore makes a strong appeal to parents whose children are ill.

In the United States there are a few medical schools devoted to homeopathic instruction, but homeopathic physicians are fewer than formerly.

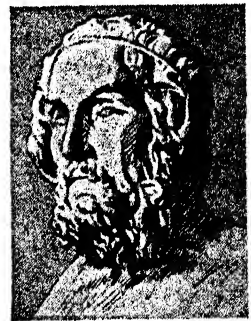
HOMER, the earliest named Greek poet, to whom ancient tradition assigned the authorship of the *Iliad* and the *Odyssey*. Of Homer's life and personality nothing is known, and it has been questioned whether such a person ever existed. Several ancient biographies of Homer are preserved, two of which, their titles state, were written by Herodotus and Plutarch, respectively. It is certain, however, that the statements of authorship are not true; the biographies are valuable only because they show what was the ancient popular tradition concerning the poet.

Many towns claimed the honor of being his birthplace, and the names of seven are preserved in an epigram beginning,

"Seven rival towns contend for Homer dead,
Through which the living Homer begged his bread."

Of these towns, Smyrna seems to have had the strongest claim, Chios coming next. At the latter town was a clan of bards called Homeridae, who transmitted the epics from father to son and claimed Homer as their founder. In one of the *Homerio Hymns*—poems addressed to the gods and because of their similarity in style ascribed to Homer, but probably for the most part of later date—the author describes himself as the "blind bard of rocky Chios."

The tradition of Homer's blindness was universally accepted. Ancient writers mention the name *Homer* as a pseudonym of the poet, and various interpretations of it are given, the most probable



HOMER

being that it meant "one who puts together." This gives color to the theory that Homer was not an original poet, but merely a compiler of current lays.

The general belief of antiquity seems to have been that Homer was born in Smyrna, lived some time in Chios and was buried in Ios. His date has been variously placed between the beginning of the twelfth century and the beginning of the seventh century B. C. The dialect and a few local allusions indicate that the *Iliad* and the *Odyssey* originated on the Ionian coast of Asia Minor and the Aegean Islands. Lycurgus is said to have brought them to Sparta, and there is record of the recitation of them by rhapsodists about 600 B. C. Solon regulated such recitation at Athens, and the Tyrant Pisis-tratus had the poems edited by a commission and arranged in what is practically their present form. Perhaps the lays or rhapsodies had previously been sung separately and were then for the first time united into two poems, the *Iliad* and the *Odyssey*.

HOMER, LOUISE, a famous American grand-opera contralto, was born in Pittsburgh, Pa., the daughter of a Presbyterian clergyman. She studied first in Boston and later in Europe, and in 1898 made her operatic debut in Paris as Leonora in *Favorita*. Since then she has been popular in France, Belgium and England, as well as in her native America. Her repertory includes many leading operatic rôles. Mme. Homer is the wife of Sidney Homer, a song-writer, and is the mother of five children. She lives in New York City.

HOME RULE, in British politics, a measure advocated especially in regard to Ireland, the leading feature of which is the establishment of self-government for the island. It involves a native parliament in Ireland to conduct all local and internal legislation, leaving the general political government of the Empire, of which Ireland is a part, to the Imperial British Parliament.

The movement originated in the formation of the Home Government Association at Dublin, in 1870. The conversion of Gladstone and many members of the Liberal party to Home Rule principles, in 1886, added immense strength to the movement, then under the leadership of Charles Parnell, but failed to carry through its program. In 1893 Gladstone again attempted to secure Home Rule, but the bill was defeated in the House of

Lords. The bettering of economic conditions and the granting of local self-government under Balfour's Conservative administration, quieted the agitation for a time, but under the leadership of John Dillon, and later of John Redmond, the movement acquired new strength.

The general elections of 1910, which gave the Irish members the balance of power in the House of Commons, were interpreted by the Liberals as a complete vindication of the party's Home Rule program. Accordingly, in 1912 and again in 1913, Premier Asquith introduced a bill providing for Home Rule, but both times it was defeated in the House of Lords. By the terms of the Parliament Act of 1911, any bill which has passed unchanged three readings in three successive sessions of the House of Commons becomes a law without the assent of the House of Lords. The Home Rule Bill was introduced for the third time in the House of Commons on March 5, 1914, and was passed on May 25. The progress of the bill was marked by much bitterness in Parliament, by great enthusiasm in Dublin and vicinity and by the organization of Ulster volunteers and threats of armed resistance in all Protestant quarters in Ireland. In June, the Ministry introduced an amending bill, which provided that each county in Ulster might vote on the question whether or not it should be excluded from the operation of the law for a period of six years. Before this amendment could be passed, however, the great World War broke out, and Parliament passed a new bill postponing the beginning of Home Rule.

In 1917 Premier Lloyd George was obliged to face the issue, and he secured an understanding in England whereby Ireland should agree upon the form of local government it desired. A convention of all factions met at Trinity College, Dublin, on July 25, and after being in session several months it was dissolved without having reached any agreement. Meanwhile, the Sinn Fein party, which demanded complete independence for Ireland, was constantly growing stronger, and in the Parliamentary elections of 1918 the party won over seventy seats in Ireland, virtually wiping out the old Nationalist party. In 1921, after incipient civil war, during which Irishmen proclaimed a republic, conferences began between Irish and English leaders and led to peaceful conclusion of the entire Irish Question. See IRELAND, subhead *History*.

In American politics the home rule movement is an attempt to secure complete local self-government by cities.

HOMESTEAD, *hom'sted*, a tract of government land open to occupation and ownership by a citizen who conforms to certain requirements. In the United States 160 acres may thus be acquired where irrigation is possible. The law today provides for enlarged homesteads of 320 acres in Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, North Dakota, South Dakota, Oregon, Utah, Washington, and Wyoming, on land not timbered or irrigated or which does not contain minerals; also for stock-raising homesteads of 640 acres on land fit only for such purposes.

The prospective "homesteader" must apply to the Federal land officer nearest the tract he wishes to secure. There he receives a *patent*, which entitles him to occupancy of the land. He must occupy the property five years, be in actual contact with it six months of each year, and cultivate a fixed percentage of it every year. At the end of the period final title to the land is given him. The fees in connection with the transaction are moderate—not exceeding \$50.

The homestead laws of the United States have opened over 277,000,000 acres to settlement and have dotted the former wilderness with homes. Although any person of good repute over twenty-one years of age may acquire a farm under the homestead act, preference is shown to soldiers and sailors; the period of their service is deducted from the five years of required occupation. Any person may pay a very nominal sum, about \$1.25 per acre, for his land, and thus be released from the rule requiring five years occupancy.

In Canada homesteaders must reside one-half of each year for three years upon homesteads and cultivate at least twenty acres of new ground each year. By what is called preëmption a settler can purchase adjoining government land to the extent of 160 acres, for which he must pay \$3 per acre, and he must cultivate fifty acres of it. A person eighteen years of age may become a Canadian homesteader.

HOMICIDE, *hom'y side*, the killing of one person by another, either through direct act, through instigation or through the omission of some act which would have prevented the killing. In this wide sense it includes manslaughter and murder (see **MURDER**), besides

so-called justifiable homicide. In this article the term is considered only in the last sense. This includes killing by accident, in self-defense, by a public officer in conformity to a judicial sentence, by an officer in performing a legal duty, or by a person to prevent the commission of a serious crime. If committed without any fault on the part of the slayer, homicide is not punishable at law.

HONDURAS, *hon doo'ras*, the third in size among the republics of Central America, lies between Guatemala and Nicaragua. The Caribbean Sea extends along almost all of its northern border; the Pacific Ocean bounds it partly on the south. The area of the country is 44,275 square miles. The population, by the 1930 census, was 854,184, or 19.2 persons to the square mile. The capital is Tegucigalpa with 47,000 people in 1933. The chief Pacific port is Amapala; on the Atlantic coast Puerto Cortez and Omoa are the most important. Other towns are La Esperanza and Santa Rosa.

The People. Nearly all of the people are Indians or mixed Indian and Spanish groups. About one-sixth of the Indians of the interior possess but little civilization. There are a few Europeans and Americans, and these control all commerce, for the natives are indolent and unprogressive. The religion is strongly Roman Catholic, though there is freedom of worship. Education is free and compulsory, yet illiteracy prevails to a great degree in some sections. In the capital city is a university and a military school. The country supports five normal schools.

The Country. Honduras is mountainous, and in the interior there are large spaces where the usual tropical heat is modified. The coast regions are low, hot and unhealthy for white people. The wealth of Honduras is found largely in its immense banana crop and in the production of cocoanuts. The bananas are raised in the Caribbean coast regions, and about 24,000,000 bunches are shipped from the country each year. The coconut yield is about 8,000,000 nuts. Besides the above there is considerable rubber, coffee and tobacco. The main food crops, raised entirely for home use, are wheat in the highlands, beans, rice and sugar. There are over 900 miles of railroad, and 3000 miles of telegraph lines.

Government and History. The republic's laws are made by a Congress of Deputies of

forty-three members, elected for four years. Its meeting is on January 1 each year; sessions are limited to sixty days. The President is also elected for a four-year term; he has a Cabinet of five Ministers.

Columbus sailed along the coast of Central America in 1502 and discovered Honduras. The first Spanish settlement was made in 1524. In 1539 the territory was joined to Guatemala, and there it remained until 1821, when a republican form of government was set up, and Honduras joined with other neighboring republics in a federation of Central American states. For many years the government of the country was unstable, wars between the groups of Central American states began in 1849, and not until 1874 was comparative peace restored. Owing to its location, surrounded by stronger neighbors, it has been the object of frequent intervention at their hands. The present Constitution was adopted in 1924.

HONE, a stone used in sharpening edged tools. The coarse varieties of hones are made of sandstone and are commonly called *whetstones*. The finer varieties are usually made of a stone formed from placing pine logs in the sea and leaving them until they turn to stone. Another variety of hone stone is called *novaculite*, originating in a peculiar quality of clay rock. The finest hones of this variety are secured in Arkansas.

HONEY, *hun'i*, a sweet substance of delicious flavor and attractive appearance, made by bees from the nectar of flowers. These insects use honey as food for themselves and their young, and it is also an important food of mankind. Bee keeping, in fact, is a well-organized and profitable industry (see **BEE**). Honey varies in color from light golden to brown, according to the flower from which the nectar is collected. White clover nectar is the source of the best light varieties, while excellent dark honey comes from buckwheat. Honey is an energy food, and is much used instead of sugar in preparing milk for infants. It is also used in the making of cough preparations, and in preserving fruit.

HONEY LOCUST, SWEET LOCUST, or **BLACK LOCUST**, a beautiful forest tree belonging to the United States. It is much like the acacia in appearance. The leaves are divided into small leaflets, and the foliage has a light appearance. The flowers are greenish and are succeeded by long, often twisted pods, containing large, brown seeds,

enveloped in a sweet pulp. This tree is especially remarkable for its formidable thorns, on which account it has been recommended for hedges. It grows to a height of seventy feet.

HONEYSUCKLE, *hun'isuk'l*, a family of twining shrubs, of which there are several varieties. The most familiar bears flowers which are trumpet-shaped and are filled with nectar. Around the species bearing flowers which are red without and orange-yellow within flutter the humming birds in search of the sweets in the depths of the blossom. The flowers of another variety, the bush honeysuckle, are small and yellow, and these attract the bees. Most honeysuckles are evergreen, and when the flowers disappear small crimson blossoms take their place.

HONG KONG, *hong'kong'*, the name usually applied to an island off the southeast coast of China and also to the city which nestles at the foot of its mountains on the shore of the China Sea. The island is Hong Kong, but the legal name of the town is Victoria. Hong Kong is at the mouth of the broad estuary that leads to the great city of Canton, ninety miles northwest. The island measures about four by ten miles in greatest width and length, and contains about thirty-two square miles. Within this area dwell (1932) 900,000 people, of which all but 20,000 are Chinese. These figures include about 94,000 living on the mainland belonging to Hong Kong called the New Territories. In Victoria 333,000, out of a total population of 342,000, are Chinese.

There is little agriculture on the island. The Chinese engage in fishing, ivory carving, glass blowing and boat making and in the manufacture of soap, toothpowder, dyes and gold and silver ware. The white population manage sugar refineries, cement works, paper mills and the quarrying of granite, all with Chinese labor, and the English conduct all government and shipping affairs.

Hong Kong is the center of British commercial interests in its part of the world. Steamships from all great ports in the world call here regularly, and to accommodate the vast shipping, Victoria has the largest docks in the empire outside of London and Liverpool.

Hong Kong was occupied by the British in 1841, and in the next year it was ceded to England by China. In the same year it was made a free port, and except that taxes were laid on liquors and opium it has so remained.

HONOLULU, HAWAII, the capital and largest city of the Hawaiian Islands, today is modern, up-to-date, Americanized city with all the public utilities found in cities in the United States. It is on the island of Oahu, 2,100 miles southwest of San Francisco, 4,800 miles east of Manila, 4,920 miles east of Hong-Kong and 3,400 southeast of Yokohama. The population in 1930 was 137,582.

As the cultivation of pineapples, rice and sugar are the principal pursuits in Hawaii, the industries of the city largely reflect these occupations. There are manufacturers of sugar-mill machinery, and there is also considerable ship repairing. There are a number of hospitals and a good public library. The University of Hawaii is in Honolulu, also Oahu College, founded in 1841, and having about 750 students.

There are several imposing bank structures of modern design. Beautiful and costly hotels are located at Waikiki Beach and in Honolulu proper. There are also beautiful and ornate theaters.

One hundred years ago Honolulu was only a village of the native Kings. In 1816 it was fortified, with an Englishman as first commandant in command, and as adviser of the King, Kamehameha I. Since that time its history has been a part of that of the Hawaiian Islands. (See HAWAII.)

HOOD, JOHN BELL (1831-1879), a leading Confederate soldier of the Civil War, was born in Owingsville, Ky. He was educated at West Point and entered the army, but resigned in 1861 to enter the Confederate service. He distinguished himself at Gettysburg and at Chickamauga, where he lost a leg. Afterwards he served with Johnston in the Atlanta campaign and succeeded him on July 17, 1864. In order to draw Sherman from his march to the sea, Hood led his forces northward into Tennessee, where in the battles of Franklin and Nashville, his army was overwhelmed.

HOOD, MOUNT, a peak in the Cascade range, in Oregon, about 50 miles east by south from Portland. It is about 12,000 feet high, is not difficult of ascent, and affords a beautiful view of the surrounding country.

HOOD, ROBIN. See ROBIN HOOD.

HOOD, THOMAS (1799-1845), an English poet and humorist, born in London. He studied engraving and in 1821 became an assistant editor of the *London Magazine*. In 1824 appeared his *Whims and Oddities*. Although he gained widest recognition in his

own day as a humorist, he began his literary career by writing serious poetry, some of which, as *Midsummer Fairies*, was highly imaginative. In 1830 he began the *Comic Annual*, in which events of the day were discussed with pungent wit. *Eugene Aram*, one of Hood's well-known poems, appeared in another annual entitled *The Gem*. He is perhaps best remembered to-day as the author of a series of poems expressing his sympathy for the poor and unfortunate, notably *Song of the Laborer*, *The Bridge of Sighs* and *Song of the Shirt*.

HOOKER, JOSEPH (1814-1879), an American soldier, born at Hadley, Mass. He graduated at West Point in 1837, served in the Mexican war, rising to the rank of colonel. In 1861 he was appointed brigadier-general of volunteers and in 1863 was placed in command of the Army of the Potomac. He displayed great ability in organization and discipline, but failed to show great talent in command of large forces. In May, 1863, he suffered a terrible defeat at Chancellorsville (See CHANCELLORSVILLE, BATTLE OF). He joined Rosecrans before Chattanooga, and on November 24 distinguished himself as a leader in the famous "Battle above the Clouds." For this service he was brevetted major-general in the regular army, and with Sherman performed notable service in the Atlanta campaign.

HOOKER, MOUNT, one of the highest peaks in the Rocky Mountains in Canada, situated near the boundary line between British Columbia and Alberta. The altitude is 10,505 feet.

HOOKWORM, a worm which lives as a parasite in the intestines, which is the cause of hookworm disease, or hookworm anemia. This is a widespread malady that has affected thousands of persons in the Southern States alone. Thousands of sufferers have been restored to health there by the efforts of the Rockefeller hookworm commission. The parasite is thread-like in form, from one-fifth to one-half an inch in length; and has three pairs of strong curved teeth, with which it fastens itself to the lining of the intestine. Infection of man takes place either through the skin or the mouth. When the number of these parasites is large, dyspepsia and profound anemia, with emaciation and even death, may result. Preventive measures include better sanitary arrangements, greater personal cleanliness, and the wearing of shoes, also special medical treatment.

HOOVER, HERBERT (1874–), the thirty-first President of the United States, was the first Quaker and the first mining engineer to be elected to that high office. The first forty years of his life had been devoted to preparation for, and the practice of, his profession. The World War gave him an opportunity for public service; as head of Belgian Relief for three years he became a world figure; then as Secretary of Commerce in the Cabinets of two Presidents he demonstrated his capacity as a capable executive.

His Early Life. Herbert [Clark] Hoover was born in West Branch, Iowa, August 10, 1874. His parents died when he was a young boy, and at thirteen he went to Oregon, to live with an uncle. Here he pursued his studies, and in 1891 entered Leland Stanford University to learn engineering and graduated in 1895. After leaving the university, for two years he worked in mines, and in the office of an engineer in California. In 1897 he was sent on a mission to investigate a mining enterprise in Western Australia. Within a year he became manager of the property, and was thus embarked on his engineering career. Offered the position of chief engineer of the Chinese Imperial Bureau of Mines, he accepted the post, but before assuming its duties he returned to California, and at Monterey, in January, 1899, married Miss Lou Henry, who had been a fellow student at Leland Stanford University. He was in Tientsin during the Boxer Rebellion, and there had experience in organizing relief for those besieged in the foreign concession. In 1903 he became head of a firm of mining engineers in London, and for the next eleven years was engaged in large enterprises which carried him again to Australia and China, and to California, Mexico, Nicaragua, Alaska, South Africa, Belgium, Russia, Borneo and Burma.

Head of Belgian Relief. The year 1914 was fateful for Herbert Hoover. While he was in London in that summer, the World War broke suddenly, and Hoover was appealed to by the American Ambassador to organize food relief for the people of Belgium, who had been reduced to the verge of starvation by the German invasion. The task meant the abandonment of his profession, but he accepted, and from October, 1914, to April, 1917, he performed the gigantic task of assembling from the United States, Great Britain and France, food supplies, and seeing that they were distributed to the people

of Belgium. By this great service Herbert Hoover won the world's admiration and many public honors.

Hoover Called Home. In 1917, Hoover was called to Washington and appointed head of the Food Administration Bureau. Food was conserved, and the surplus was used to feed a large part of Europe. His record of accomplishment and his wide and intimate knowledge of world affairs led to his appointment, by President Harding, in 1921, as head of the Department of Commerce. He retained this post under President Coolidge; under his administration it became one of the most effective departments of the Government.

Election as President. In 1928, Hoover was the leading candidate of the Republican Party for President, and he was nominated at the convention of the party at Kansas City, in June, Charles Curtis receiving the nomination for Vice President. The election in November resulted in a victory for the Republican ticket, Hoover having a popular majority of 6,356,849 votes. In the Electoral College he received 444 votes, to 87 for Governor Alfred E. Smith, his Democratic opponent.

Hoover's Administration. Shortly after his inauguration on March 4, 1929, President Hoover called the Seventy-first Congress into special session to meet the demand for farm relief and for "limited changes" in the tariff. A farm-relief bill was enacted, providing for the formation of the Federal Farm Board (which see). A new tariff bill was also introduced but this was not finally passed until June, 1930. This bill, known as the Smoot-Hawley Tariff Act, provided substantial increases in duties on agricultural products and smaller increases on industrial products.

The economic and financial structure of the country received a violent shock as a result of the crash in the stock and securities market in October, 1929. To meet this crisis, President Hoover advocated legislation to appropriate large amounts for construction to aid unemployment; revision of the immigration laws, and further measures for farm relief.

The President believed in coordinating governmental and private agencies in the effort to better the situation. On his own motion, he organized a large committee on unemployment relief, a citizens' committee to organize an anti-hoarding campaign; he called upon

employers to maintain wages so far as possible; he appointed a committee on home building and home ownership.

On June 20, 1931, President Hoover made a proposal for a moratorium on foreign debts to aid world recovery. The plan called for a suspension for one year of the payment of reparations by Germany and of payment of the war debts, principal and interest, owed to the United States, Great Britain and France. The proposal was accepted by the other nations interested, and was ratified by Congress.

The remainder of President Hoover's term was devoted to efforts to solve the economic problems that overshadowed all other issues. On his recommendation Congress created the Reconstruction Finance Corporation (which see). A system of Home Loan Banks was also created. To meet the increasing deficit in the Treasury and to balance the budget, the President proposed a reduction in government expenditures and increased revenues. A general revenue bill was passed in June, 1932. It imposed several new taxes and increased rates on income tax schedules.

In March, 1932, Congress passed a resolution calling for an amendment (the twentieth) to the Constitution; it was approved by the President, and ratified by the States in January, 1933 (See CONSTITUTION).

Election of 1932. The Republican National Convention, at Chicago, in June, renominated President Hoover. Two weeks later, the Democratic Convention nominated Governor Franklin D. Roosevelt of New York. In the National election, in November, President Hoover was defeated by Governor Roosevelt by a popular vote of about 7,000,000, and by an electoral vote of 472 to 59.

Later Events. The matter of war debts arose to trouble the administration in December, 1932. Great Britain and France requested a postponement of payments due December 15, and a reopening of the whole debt question. Of the major debtor nations, Great Britain paid its installment; France failed to do so. The war debt question was left open for the incoming administration. In January, 1933, Congress passed a bill for the independence of the Philippines. The bill was vetoed by President Hoover, but was again passed over his veto.

Hoover's Place in History. Time will deal with and appraise President Hoover's qualities, and his successes and failures as the

Executive of a great nation. During almost his entire term of office the country was involved in a great and devastating economic depression. He applied his genius for organization to the inauguration of many and vast agencies for relief, most of which had congressional and public support.

Outline on HERBERT HOOVER

I. EARLY LIFE

Birth and boyhood
Education

II. CAREER AS ENGINEER

Mining enterprise in Australia
Chief engineer in Chinese enterprise
The Boxer Rebellion
Activities in many countries

III. WORK DURING THE WORLD WAR

Head of Belgian Relief
Received many honors
Food Administrator in the United States

IV. SECRETARY OF COMMERCE

• The Department increased in usefulness under his leadership

V. ADMINISTRATION AS PRESIDENT;

AFFAIRS OF MAJOR IMPORTANCE:

Election of 1928
Inauguration in 1929
Special session of Congress
Federal Farm Board
Smoot-Hawley Tariff Act
Financial Crash, October, 1929
Moratorium on foreign debts
Reconstruction Finance Corporation
Home Loan Banks
War Debt Discussion, December, 1932
Twentieth Amendment Ratified
Philippine Independence bill passed
Election of 1932

HOOVER DAM, one of the names applied to Boulder Dam. See IRRIGATION.

HOP, a plant related to the hemp plant, cultivated for its seed catkins, which are used to give beer its bitter flavor. Hops are cultivated extensively both in Europe and the United States. They are propagated by cuttings, several pieces being planted together in hills. The vines are trained to climb poles inserted in the hills. At the proper season the poles are taken down, the catkins are gathered into huge baskets and carried to a building, where they are dried and pressed into solid bales. In this condition they may be kept for years. The principal hop-growing regions of the United States are New York and the Pacific Coast States.

HOPE, ANTHONY. See HAWKINS, ANTHONY HOPE.

HOPI, *ho'pe*, or **MOKI**, *mo'ke*, a tribe of Indians inhabiting seven villages in Northeastern Arizona. They number about 2,000, and are the survivors of a once powerful tribe whose holdings at one time extended over a wide territory. The Hopi dwell in *pueblos*, villages built on the sides and tops of steep cliffs reached only by difficult trails (see PUEBLO). These Indians are small and active, and are industrious and good-tempered. They produce beautiful specimens of pottery, basketry and woven goods, and are successful farmers. Among their peculiar ceremonies is the snake dance, during which the performers dance about with live snakes in their mouths.

HOPKINS, MARK (1802-1887), an American educator, born at Stockbridge, Mass. He became professor of moral philosophy in Williams College, and later, president of that institution, which position he held for thirty-six years. During his administration the influence of the college was greatly extended, and it became widely known throughout the country as an institution of the first rank. Doctor Hopkins had a strong personality, which he impressed upon all students, and because of his influence in the development of character, as well as his power as a teacher, he ranked as one of the greatest educators of his time. Some of his best-known works are *The Influence of the Gospel in Liberating the Mind*, *Moral Science*, *The Law of Love and Love as Law* and *The Spiritual Idea of Man*.

HOPPER, [William] DEWOLF (1858-1935), an American comedian of great versatility, was born in New York City. His

stage career began in 1879, and from that time until his death he was continuously before the public, winning greatest fame in light opera. Among his leading rôles were those of Ko-Ko in *The Mikado*, which he played at intervals for twenty years; Dick Deadeye in *Pinafore*; and the Lord Chancellor in *Iolanthe*. Bairnsfather's World War sketches of *The Better 'Ole* were dramatized, and Hopper took the rôle of Old Bill. He also starred in *Erminie* and *The Student Prince*. Hopper was married six times, and five times divorced. His third wife was the famed comedienne Edna Wallace (Hopper); his sixth was Mrs. Lillian Glaser, a singer. He was the father of two sons, by his second and fifth wives, Ida Mosher Hopper and Ella Flurry Hopper.

HORACE, *hor'ase* (65-8 B. C.), the common name of QUINTUS HORATIUS FLACCUS, the greatest of Latin lyric poets, was born at Venusia, in Southern Italy. When Horace was about twelve years of age his family removed to Rome. There he received an excellent education, and six years later went to Athens to complete his studies. After the assassination of Caesar, Brutus came to Athens, and Horace, along with other Roman youths, joined his army. He was appointed to a military tribuneship, was present at Philippi, and on the defeat of Brutus saved himself by flight. On the proclamation of an amnesty to the vanquished, Horace returned to Italy, but found his father dead, his paternal estate confiscated and himself reduced to poverty. He was, however, enabled to purchase a clerkship, which permitted him to live frugally and to cultivate his poetical talent.

His poems procured him the friendship of Vergil and Varius, and to them he was indebted for his first acquaintance with Maecenas, who was the friend and confidant of Augustus Caesar and who expended his wealth for the encouragement of literature and the arts. Maecenas received Horace among his intimate friends and, after some years presented him with a small estate in the Sabine hills, which was sufficient to maintain him in ease and comfort during the rest of his life. He had also a cottage at Tibur, and at Rome or at one of these country residences the latter part of his life was spent. Although he was ultimately introduced to Augustus, he never sought favors from him, and he is said to have declined an offer of

the management of the private correspondence of Augustus.

His works consist of four books of *Odes*; a book of *Epodes*, or short poems; two books of *Satires*, and two books of *Epistles*, one of which is often cited as a separate work, under the title of the *Art of Poetry*. The lyrics of Horace are largely based on Greek models, but the exquisite beauty of his language is all his own. It is, however, in his satires and epistles that he shows the greatest power and originality, wit, gravity and gaiety, tender sentiment and melancholy. His writings have been often translated, and into many languages. In English, Pope and Swift have given free imitations of various parts of his writings.

HORATIUS, *ho ra'shius*, a legendary hero, immortalized in Macaulay's *Lays of Ancient Rome*. According to the story, an invading Etruscan army had almost reached Rome before the citizens realized their danger. To hold the invaders in check while his compatriots escaped Horatius, with two others, following an old custom, challenged the enemy leaders to engage in single combat before the clash of the two armies. The ruse was successful, and while the fray was in progress the Romans destroyed the bridge over the Tiber and then made their escape. Horatius, though wounded, swam across the river to safety.

HOREHOUND, a plant of the mint family, with whitish, downy leaves and stem. The flowers are small and nearly white, possessing an aromatic smell and bitter flavor. The leaves also are fragrant and in various forms are used as a popular remedy for coughs and colds. Horehound is a native of Great Britain and Continental Europe, and is naturalized in America, where there are half a dozen species.

HORIZON, *ho ri'zun*. To an observer whose view is unobstructed, the sky seems to meet the earth in a circular line. On the ocean there is a similar curve where sky and water apparently join. This line is called the *horizon*, a word from the Greek *horos*, which means *boundary*. The higher one ascends the farther away the horizon line appears to the eye. This variation is caused by the curvature of the earth's surface. In astronomy the name *rational horizon* is applied to the circle formed by a plane passing through the earth's center, perpendicular to the plumb line, and extended to meet the sky.

HORMONES, a word from the Greek, which freely translated means *I stir to activity*, are substances formed or secreted in the ductless glands of the body and carried from them in the blood to other organs and tissues, whose functions they stimulate or regulate. The principal glands that are the source of hormones are the thyroid, adrenal, pituitary, thymus, pancreas, ovaries, testes, and parathyroid. In the circulatory system the hormones as chemical agents link all the organs of the body and serve to coördinate and synchronize their functions.

HORN, a brass wind instrument used in bands and orchestras. There are three main types of horn: the kind used by fox-hunters for signaling; the sort used by military bands, called a saxhorn; and the French horn, one of the most delicately toned of musical instruments. This last consists of a coiled metallic tube about ten feet in length, the two ends shaped to form mouthpiece and bell, respectively. It has been greatly improved by the addition of valves, which enrich the quality of tone and give variety to the pitch. Music for the horn is written in the key of C and an octave higher than it is played. However, by adjusting the length of the tube one can play it in almost any key.

HORN, a general term applied to all hard and pointed appendages of the head of animals, such as those in deer, cattle, sheep and goats. As a term denoting a particular kind of substance, nothing should be called horn which is not derived from the epidermis, or outer layer of the skin, whether on the trunk, hoofs or head. Horn is a tough, flexible, partially transparent substance, most liberally developed in the horns of animals of the ox family, but also found in connection with the "shell" of the tortoise, the nails, claws, and hoofs of animals and the beaks of birds.

In some species of animals the males only have horns, as, for instance, the stag. In cattle, both male and female have horns. Horns differ widely in the case of different animals. The horns of deer consist of bone, and they fall off at regular intervals; those of the giraffe are independent bones, with a covering of hairy skin; those of oxen, sheep and antelopes consist of a bony core covered by a horny sheath. The horns of the rhinoceros alone consist exclusively of horny matter. See **MOLTING**.

HORNADAY, WILLIAM TEMPLE (1854-1937), a zoölogist who became one of Amer-

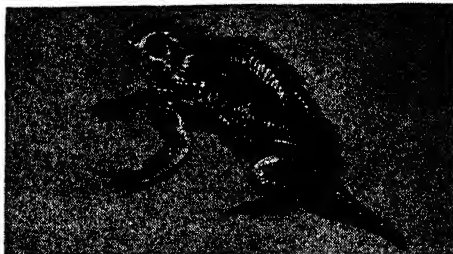
ica's greatest authorities on animal life, was a native of Indiana. He took special work in zoölogy and museum technic in Europe, and began his career as collecting zoölogist for American museums; in that capacity he traveled in many countries. He was chief taxidermist for nearly ten years in the National Museum, Washington, then was made director of the great New York Zoölogical Park, in which post he served thirty years.

HORN'BEAM, a small, bushy tree common in Great Britain, where it is often used in hedges, as it survives cutting and in age becomes very stiff. The wood is white, tough and hard and is used by carpenters and wheelwrights in making various articles, but it does not withstand the action of water or the weather well and should not be used in exterior construction. The inner bark yields a yellow dye. The American hornbeam is a small tree sparingly diffused over the whole United States, where it is called *leverwood*, *ironwood* and *blue beach*.

HORN'BILL, a family of large, ungainly birds, species of which are found in Africa and East India. The bird's characteristic feature is an enormous bill, broad and curved; in some species it has a hornlike projection at the base of the bill nearly as large as the bill itself. The bill of the rhinoceros hornbill is about a foot long, but in spite of its great size it is very light. The bird is about five feet long, is stupid and clumsy, has a heavy, slow flight and feeds upon soft foods, insects and small reptiles. It nests in hollow trees, and when the eggs are all laid the female goes upon the nest and the male closes with mud all but a narrow opening. Through this opening he feeds the female, who sits in imprisonment upon the eggs until they are hatched.

HORNBLLENDE, *horn'blend*, called also **AMPHIBOLE**, is a widely distributed crystalline mineral, occurring in a number of different forms and in a great variety of colors. It is composed chiefly of magnesia, silica and alumina. Sometimes iron is present, and then the crystals are green. One variety is of a satiny whiteness, another is various shades of red. Common hornblende is either black or dark green. It is found not only in crystals, but also in granular formation, and sometimes occurs in flakes resembling mica, but, unlike mica, the flakes do not peel off. Hornblende is of the hardness of feldspar.

HORNED TOAD, a name given to a genus of lizards, of toadlike appearance, found in tropical America west of the Mississippi, where it lives in dry places and feeds upon



HORNED TOAD

flies and various insects. The scales covering the body bear sharp, horny spines; hence the name. It is also called horned lizard and California toad. There are nine different species. All are harmless.

HORNELL, N. Y., a city in Steuben County, ninety miles southeast of Buffalo, on the Canisteo River and on the Erie and the Pittsburgh, Shawmut & Northern railroads. It was settled in 1790 and was known as Upper Canisteo until 1890. The place has a public library, an academy, several city parks, and two hospitals. It is in a fertile agricultural and fruit region and has manufacturing of lumber products, railroad supplies, agricultural implements, furniture, silks and various other articles. Population, 1920, 15,025; in 1930, 16,250, a gain of 8 per cent.

HOR'NET, an insect much larger and stronger than the ordinary wasp (which see), but like the latter in many of its habits. It is voracious, feeding on fruit and honey and on other insects. Hornets live in colonies



HORNET, ENLARGED

and make their nests of a kind of paper work, placing them in hollow trees, in the crevices of walls and upon the limbs of

trees. All species are able with their stings to inflict painful wounds, which are usually accompanied with considerable swelling.

HOROSCOPE, *hor'oskope*, in astrology, a word used to designate the distribution of stars in a part of the heavens at a given time and with reference to some person. The entire earthly career of a man was supposed at one time to be determined by the stars in the ascendant, or "rising" in the east, at the hour of his birth. The old astrologers attempted to "tell fortunes" by "casting a horoscope," that is, by making a diagram of the eastern heavens as they appeared at the time of the person's birth, and then interpreting, according to a body of lore on the subject, the signification for that person of the stellar arrangement at the hour he was born. Needless to say, the notion is no longer regarded seriously.

HORSE, a domestic animal more important to civilization than any other dumb creatures excepting cattle. Nobody knows when it was first domesticated; it was the servant of man, and used then principally in war, thousands of years ago. It was derived from breeds of wild horses, native of the East, and taken into Europe and thence to America by those who followed Columbus.

The horse belongs to the same family as the ass and the zebra. Its characteristics are a long mane and tail; a single, unparted hoof; a graceful, sleek body, covered with short hair, usually of a single color; and a slightly arched neck.

Modern horses can be classified under three groups. These are the small breeds, generally known as ponies; the heavy draft horses, and the more graceful thoroughbreds, used for carriage horses and racing. The ponies have descended from the wild horse of the mountainous regions of Northern India. The heavy draft horses have been developed by careful breeding with the larger types of central and northern Europe, and the thoroughbreds are from the Arabian and Turkish horses. In England and America horse racing has been an enticing sport for many years, and much attention has been given to the development of racing animals, until now horses that can trot a mile inside of 1:40 are found on race courses. However, because of gambling which horse-breeders cannot separate from trials of speed, racing is prohibited except in a few notable centers in the United States.

The horse is one of the most intelligent of animals and is gifted with keen senses. He can distinguish objects at night, and his large ears, which can be turned in different directions, enable him to perceive sounds that man cannot hear.

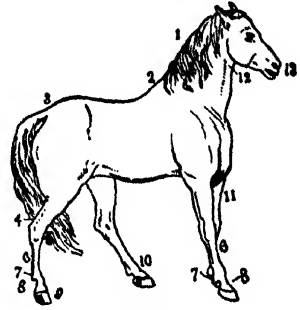
His sense of smell sometimes also warns him of the approach of danger, and it enables him to distinguish his master from other men.

The horse takes more kindly to man than other animals and becomes more devotedly his friend. The Arab loves his horse next to his family, and the animal returns his affection. Horses often show love for children and form friendships with dogs and other domestic animals. They can usually be ruled by kindness, and no animal deserves better treatment or returns it with more certain gratitude.

HORSE-CHESTNUT, *ches'nut*, a large family of handsome trees and shrubs, with snowy white, yellow or red flowers and fan-shaped leaves which grow on opposite sides of long stems. It was first known in Tibet. Some of the trees grow to be sixty or eighty feet high. The seeds are large, brown and highly polished, and the bitter meats have been used as horse feed, hence the name. The trees of the North America species are not as large as the true horse-chestnut, and their wood is of little value. The horse-chestnut is in no way related to the chestnut which produces the table nuts. See CHESTNUT.

HORSEFLY. See GADFLY.

HORSE LATITUDES, belts of tropical calm found near the tropic of Cancer and the tropic of Capricorn, a name first applied by sailors. These are not continuous belts, but within these latitudes regions of calm appear, separated by spaces where there is a regular and constant breeze. They are but a few degrees wide and move slightly north and south with the movement of the sun. Within these regions the weather is clear,



HORSE

1, Crest; 2, withers; 3, croup; 4, hamstring; 5, hock; 6, cannon; 7, fetlock; 8, pastern; 9, hoof; 10, coronet; 11, arm; 12, gullet; 13, muzzle.

and fresh, light, variable winds follow the occasional calms. The horse latitudes are not dangerous, as are the doldrums, but are a hindrance to sailing vessels. These calms are so named because before the days of steamships many horses were exported from the United States in vessels whose route lay through the regions of tropical calms in the North Atlantic. If becalmed for any length of time some of the horses were thrown overboard, since the ship could not carry a sufficient supply of fodder for the prolonged voyage. See DOLDRUMS.

HORSEMANSHIP. See RIDING.

HORSE POWER, the unit of force employed in measuring the power of steam engines and other motors. A horse power is a force which will raise a weight of 33,000 pounds one foot in one minute. An engine of one hundred horse power could lift the same weight one hundred feet in one minute. This estimate is theoretical. In a practical estimate one-tenth is deducted for friction.

The actual horse power developed in an automobile engine is found by what is known as the "S. A. E." formula, adopted by the Society of American Engineers. It takes into consideration only the area of the piston, and determines the horse power by multiplying the square of the diameter (the bore) of the cylinder by the number of cylinders and dividing the result by 2.5.

HORSE RACING. See RACE.

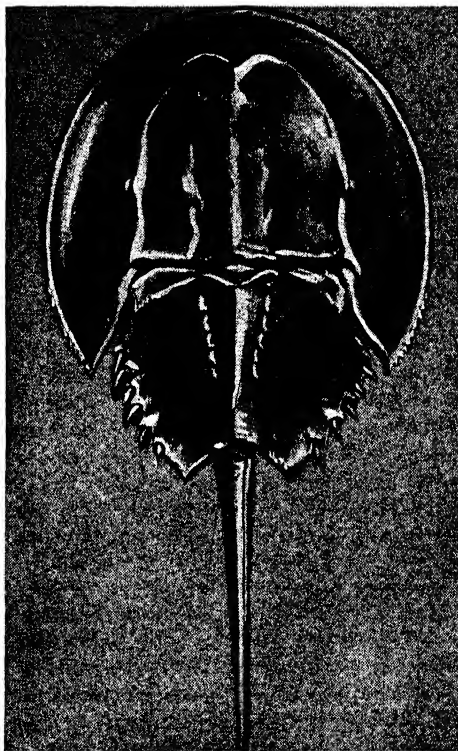
HORSE-RADISH, a plant belonging to the mustard family, whose whitish root possesses a pungent taste and odor and when grated is used with vinegar as a relish. It is also employed medicinally as a stimulant. Horse-radish is now cultivated in many parts of the world, but was first known in Southern Europe.

HORSESHOE, a shoe for horses, consisting commonly of a narrow plate of iron, bent into a form somewhat resembling the letter U, so as to accommodate itself to the shape of the horse's foot. Horseshoes are manufactured by machinery, except that projections, called corks, at the ends and in the center of the curve, are fashioned by the blacksmith when the shoe is fitted to the foot.

Horseshoes do not appear to have been known to the ancients. Xenophon, Vegetius and others mention various processes for hardening the hoofs so as to make them stronger, but say nothing of any protection like the horseshoe. Iron horseshoes are men-

tioned as being in use in Europe in the ninth century of our era. Their use is now universal.

HORSESHOE CRAB, a large crustacean which receives its name from the shape of its shell. It lives in deep waters and comes to the surface only during the spawning sea-

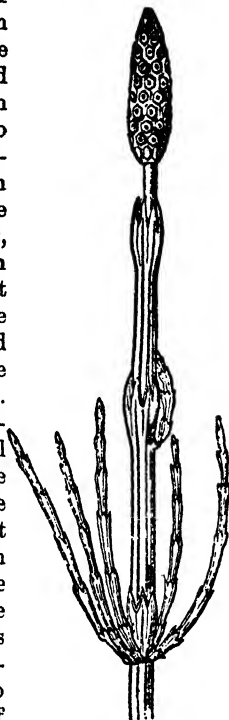


HORSESHOE CRAB

son, when great numbers appear. A species called the *king crab*, found on the northeastern coast of the United States, reaches a length of nearly two feet. The body of the horseshoe crab is composed of two parts, the horseshoe shell and a back region, which is prolonged into a long, spinelike tail. The animal burrows in the sand and mud and lives on shellfish and worms. In burrowing, the head is thrust downward and the tail is used as a brace to push the body forward.

HORSETAIL RUSH, or **EQUISETUM**, a peculiar plant, represented now by only one genus, though in the early history of the earth there were many kinds, some of which were enormous trees. The present plant is small and slender, with roughly ridged stem, and it may be recognized by the ease with which it is pulled apart at the joints, which

are surrounded by circles of minute leaves. The stem is green in all species, except that the fertile plants of some are colorless. In one or two species the stem is straight and unbranched, while in others it branches so that the plant resembles a little evergreen tree. These rushes are not flowering plants, but the fertile form produces spores not unlike those of the fern. These are held in cases that resemble miniature pine cones. Each spore is provided with two spiral bands which, while the spore is moist, are coiled tightly about its body, but when dried unroll to be again drawn up to the body when moisture is applied. It is an interesting thing to watch the action of these bands under a simple magnifying glass. The result of the opening and closing of the bands is to bring the spores tightly together in masses. The horsetail rush is commonly known as the *scouring rush*.



HORTICULTURE, *haw'ti kul'ture*, the cultivation of vegetables, fruits and ornamental plants. It is divided into four classes—fruit growing in orchards; truck farming; floriculture, or the raising of flowers and ornamental plants; and landscape gardening.

A more detailed discussion of these branches will be found under the headings Gardening, Landscape Gardening, Floriculture, Grafting, Greenhouse. See also, under their respective headings, articles on various fruits, flowers and vegetables.

HOSEA, *ho se'ah*, the first among the minor prophets of the Old Testament. Nothing is known of his life except that he was the son of Beeri and that he prophesied in the reigns of Uzziah, Jotham, Ahaz and Hezekiah, kings of Judah. The book of *Hosea*, which contains fourteen chapters, is divided into two parts, and is made up

chiefly of lamentations concerning the backsliding of the Israelites.

HOS'MER, HARRIET (1830-1908), an American sculptor, born at Watertown, Mass. She studied at Rome under John Gibson, and her art shows a leaning toward the classical. In addition to a fountain in Central Park, New York, and two fountains in private grounds in England, she has executed ideal heads, notably those of *Daphne*, *Medusa* and *Puck*. *The Sleeping Faun*, *The Waking Faun*, *Zenobia in Chains* and *Beatrice Cenci* are among her best pieces.

HOSPITAL, in a broad sense, a building or group of buildings devoted to the care of various kinds of helpless and needy people. The name is used most commonly, however, in connection with institutions for the care of those who are sick and injured; that is, medical and surgical hospitals. It is with this group that this article deals.

There are two general types of hospitals, in respect to details of construction. There is the hospital consisting of one building of many stories (with possibly a few adjoining structures), on a comparatively small area, and the hospital consisting of numerous one-story buildings, covering many acres of ground. In the United States and Canada the *multiple-story* type is the more common, while in Europe the hospital of many buildings, called the *pavilion* type, is preferred.

The best modern hospitals are admirably equipped to carry on their work of saving human life. The patients are cared for in wards of several beds or in private rooms, according to the ability of the inmates to pay for service. Besides the sick rooms the hospital contains administrative offices, reception rooms, operating rooms, a pharmacy, diet kitchens, baths, lavatories, accommodations for nurses, laundries, etc. The finest possible equipment for heating, lighting and ventilation is used, and sanitary regulations represent the latest advance in that field.

How Conducted. The institution is governed by a board of managers, and is under the immediate supervision of a superintendent. He is assisted by various house officers, including a head nurse, a matron, or chief housekeeper, a steward, who has charge of food supplies, an engineer and a pharmacist. Medical graduates, who reside in the hospital for a specified time, and attending physicians, direct the nurses. Resident doc-

tors are called *internes*. They often give their services free, but receive board and lodging, accepting experience in lieu of salary. The *internes* are under the direction of a house physician and of visiting physicians especially qualified for such service. Male attendants, called *orderlies*, assist in the menial work of the wards. In connection with the hospital is maintained a training school for nurses; the course includes theoretical and practical work, and extends over a period of two or three years.

Military and Naval Hospitals, or establishments for the reception and care of sick and wounded soldiers and seamen, have been in existence in all civilized countries for a long period. Military hospitals are either permanent or temporary establishments. Temporary hospitals are any available buildings in the immediate vicinity of the scene of operations, and they play an important part in keeping up the morale of armies. Hospital ships are fitted out to accompany all expeditions on sea. They serve either as stationary hospitals, or they sail home or to a near-by port with the sick on board. Such a ship is held to be immune from attack by belligerents, according to The Hague regulations, provided it carries no arms and makes no attempt to give aid except to sick or wounded. Army hospitals, under Red Cross auspices, give efficient service.

HOSTAGE, *hahs'tayj*, a person given by one country, town or tribe to another as surety of the performance of contracts. It was once common in time of war for a town that had surrendered to give the victors the custody of several officers, or prominent civilians, as pledge that the conditions of surrender would be lived up to. Sometimes, also, the victors placed a hostage in the hands of the vanquished, to guarantee the fulfillment of their promises. When the conditions had been fulfilled, the hostages were returned. The forcible detention of captives in war as hostages for the purpose of exacting obedience to the demands of the aggressor under threat of death is frowned upon by all civilized nations. Belgium suffered from such exactions by the German army during the World War.

HOTBED, a small section of soil, usually enriched by fertilizer, and covered with a glass-topped frame to exclude cold air. It is generally employed to force the growth of plants in early spring, with the expecta-

tion of transplanting them in open ground after frosts have disappeared. The heat in a hotbed results from the rays of the sun through the glass and from fermentation. The usual fertilizer is manure, but other fertilizing agents may be employed.

Sometimes hotbeds are used during the entire growth of vegetables or flowers, to force them to early maturity, to take advantage of high prices for such products marketed out of season.

HOTCH-KISS, BENJAMIN BERKELY (1826-1885), an American inventor of guns employed in warfare, was born in Watertown, Conn. He designed a field gun on a new pattern, and in 1860 he submitted to the United States government a system of rifle projectiles, which was largely used during the Civil War. In 1867 he introduced his revolving cannon to the European governments, and after that he devised a magazine rifle. All his inventions have now been supplanted by other material of improved pattern, but they were at one time notable.

HOTEL', a house open for the accommodation of the public, with board and lodging. It is a comparatively modern development of the old inn, or road house, which is still common in Europe, where provision was made for occasional guests. Hotels are of two principal kinds—those managed upon the so-called *European* basis, according to which a set price is paid for a room and its accompanying accommodations, while the guest pays separately for the food which he orders; those on the *American* plan, according to which the guest pays a certain amount each day for both room and meals. Another kind of hotel has developed within recent years, though actually on the American plan; it is the so-called *family* hotel, which seeks permanent rather than transient guests.

Hotels must be conducted according to the laws affecting common carriers. No respectable-appearing guest may be denied service if he is able to pay for it, unless the place is already crowded to capacity. They usually disclaim liability for the safety of valuables unless these are deposited with the management in their safes or vaults; unless the damage done is by act of God or public enemy; they have a lien on the goods of guests to assure payment of bills. See CARRIER.

In great cities hotel-building has reached remarkable proportions, and no less wonderful is the lavishness in equipment. There

are hotels having accommodations for more than 5,000 people, who are offered every luxury that the deepest thought of builders and managers can provide. The most recent development is the grouping of a number of hotels in various cities under a single ownership and management. Among the famous "chains" of hotels are the Ritz hotels, which may be found in the United States, Europe and South America. The Statler group confines locations to the United States; its hotels are located in Detroit, Cleveland, Buffalo, Saint Louis and New York and Boston.

HOTEL DE VILLE, *de veel*, the French name for *town hall*. Among the many fine buildings of this nature in France is the Hotel de Ville of Paris, a splendid example of Renaissance architecture. The interior contains many beautiful paintings and statues, and is noted also for its grand staircase and luxurious festival hall. Some of the town halls destroyed by the Germans in the northeastern part of France in the World War were among Europe's finest architectural designs.

HOT SPRINGS, ARK., the county seat of Garland County, fifty miles southwest of Little Rock, on the Missouri Pacific and the Chicago, Rock Island & Pacific railroads. The city is in a beautiful location and has a mild climate. On account of the many flowing springs of hot water, it has become one of the greatest health resorts in the world. To accommodate as many as 150,000 of visitors annually there are a large number of hotels, some of them of palatial proportions. The water is prescribed for bathing and drinking and has strong curative properties. In 1832 the national government set off 2,529 acres of land, with the thermal springs in the center, as a government reservation, and in 1921, by Act of Congress, 927 acres was set aside as the Hot Springs National Park. The Park is administered by the Director of the National Park Service. Recreation facilities are abundant. Considerable stone is quarried in the neighboring mountains, and it is a lumber and cotton market. Hot Springs was settled about 1804 and was chartered as a city in 1879. A fire on September 5, 1913, destroyed property to the value of \$6,000,000. Population, 1920, 11,695; in 1930, 20,238.

HOTTENTOTS, a peculiar African race, supposed by some authorities to be the aboriginal occupants of the south end of that

continent, south of the Orange River and west of the Kei. When young they are of remarkable symmetry; but their faces are ugly, and this ugliness increases with age. The complexion is a pale olive, the cheek bones project, the chin is narrow and pointed and the face consequently is triangular. The lips are thick, the nose is flat, the nostrils are wide, the hair is woolly and the beard is scanty. The ears are large, without lobules.

When the Dutch first settled at the Cape of Good Hope, in the middle of the seventeenth century, the Hottentots were a numerous nation, of pastoral and partially nomadic habits, and occupied a territory of 100,000 square miles. The invasion of Europeans gradually drove them farther inland. The early Boer settlers in Africa were in constant warfare with them, and German colonists occupied large sections of the original Hottentot territory. From an estimated total population of 200,000, their numbers have decreased to a few thousands in widely separated sections.

HOUDON, *oo dawn'*, JEAN ANTOINE, the greatest French sculptor of his generation, was born at Versailles. When only thirteen years of age he began to attract attention, and at twenty won the Prize of Rome. After ten years' study in Rome he returned to Paris and became an instructor in the School of Fine Arts. In 1785 he visited America with Franklin and while here executed a statue of Washington, which is now in the state capitol at Richmond, Va. Among his other important statues is one of Voltaire and an ideal figure of Cicero. He executed more than 200 busts of eminent men and women, including Franklin, Washington, Napoleon, Lafayette, Rousseau and Molière, all of which show remarkable technical skill and insight.

HOUND, a name given generally to hunting dogs, but restricted by scientific writers to such as hunt by scent. Among the varieties are the bloodhound, staghound, foxhound, dachshund, harrier and beagle. Hounds are distinguished not only by their keenness of scent, but by gentleness and intelligence. Of the rough-haired and smooth-haired varieties, the former manifest the greater affection for man. See Dog.

HOURGLASS, *ow'glas*, an ancient instrument for measuring time, consisting usually of two hollow bulbs, placed one above the other, with a narrow neck of com-

munication, through which a certain quantity of dry sand, water or mercury is allowed to run from the upper to the lower bulb, the quantity being adjusted so as to occupy an hour in passing from one bulb to the other. When all the contents has run into the lower bulb, the glass is turned. The hourglass was used in churches in the sixteenth and seventeenth centuries to regulate the length of sermons. It is now only a curiosity. See CLOCK.

HOUSE OF COMMONS. See GREAT BRITAIN, subhead *Government*.

HOUSE OF LORDS. See GREAT BRITAIN, subhead *Government*.

HOUSE OF REPRESENTATIVES. See REPRESENTATIVES, HOUSE OF.

HOUSING PROBLEM, a social, economic, and industrial situation that has arisen from overcrowded conditions in the underprivileged sections of cities. In the poor tenement districts of great population centers and in the mining and mill areas of smaller cities laborers have been forced to live in crowded quarters, sometimes in hovels, with lack of good air and sanitation, resulting in increase in death rate, a lowering of physical and moral standards, mental stagnation, a feeling of defeatism, and a rankling realization of the inequalities of life.

In the last decades of the past century better housing began seriously to be discussed, but not until the dawn of the twentieth century was a widespread and concerted effort made in that direction. Vital and effective legislation assumed form, and especially after 1930 concrete results were apparent. What is termed slum clearance has razed thousands of insanitary buildings, and in their place have been built structures conforming to laws requiring proper air space, light, plumbing, and other modern conveniences. Outlying sections, where land is cheaper, have been dotted with low-cost housing projects, and wherever possible, those whose lives have been spent largely in squalid surroundings have been induced to move into these more desirable quarters.

In the overcrowded section of the lower East Side in New York City, where living conditions have grown steadily worse for more than a hundred years, a slum-clearance project has erected a vast apartment building covering several blocks, involving the expenditure of about ten million dollars, and it is rapidly changing standards of living in

a considerable area in all directions. In the borough of Queens, across East River from Manhattan, many more millions have been expended, with the assistance of government loans, in the erection of vast low-cost apartments which are drawing large blocks of population northward from less inviting areas. Philadelphia saw the initial good results arising from the New York effort, and clearance plans were inaugurated there.

As a part of the national recovery plan of the so-called New Deal, put into effect in 1933 to combat the nation-wide financial depression, great sums of money were placed at the disposal of the Federal Emergency Housing Corporation by the Federal government to "construct, reconstruct, alter, and repair" low-cost housing and slum-clearance projects, including houses, homes, and structures "of every kind and nature."

Many cities besides those named and smaller industrial centers are spurred to activity by the proffered aid of the Housing Corporation. It made available to states and cities information to serve as a basis for the formation of housing authorities.

The housing problem in Europe is everywhere serious. In Great Britain progress has been made in slum clearance and the development of suburban communities. Germany has initiated a scheme of home building by and for the unemployed. In Vienna, the huge apartments built for working people are models of their kind.

HOUSTON, SAM (1793-1863), an American pioneer soldier and political leader, born near Lexington, Va. After his father's death, his family emigrated to Tennessee, and he later went to live among the Cherokee Indians, where he was adopted by Chief Oolooteka as his own son. In 1811 he returned to his family and two years later enlisted in the regular army. He served under General Jackson, and in 1817 aided in the negotiations with the Cherokees. On his return to Nashville, he studied law and practiced for a brief time. He served in Congress from 1823 to 1827, then became governor.

In 1832 he went to Texas and soon became the leader of the American colonists. He was a member of the convention in April, 1833, which attempted to form a state constitution. When the trouble with the Mexicans had led to an armed conflict, Houston was made the commander in chief of the Texan forces. With a small band of

undisciplined troops he conducted the military movements which led to the defeat of Santa Anna in the famous Battle of San Jacinto, April 21-22, 1836. This brought about the independence of Texas, and in September Houston was elected President of the republic. He served three terms and was the chief agent in bringing about the admission of Texas to the Union in 1845. He sat in the United States Senate for twelve years and in 1859 was elected governor of Texas. At the outbreak of the Civil War, he retired to Huntsville, where he died two years later.

HOUSTON, hu' ston, Tex., the county seat of Harris County, fifty miles northwest of Galveston, on the Houston Ship Canal, fifty miles from the Gulf of Mexico, and on the Southern Pacific, the International-Great Northern and fifteen other railways. Two interurban railways, an airport and several landing fields are available.

Manufacturing plants number 429, wholesale firms 366, and retail establishments nearly 4,000. The principal industries are oil refining, oil drilling, cotton seed oil mills, cotton fabricating, rice milling, Portland cement, steel products, metal foundries, chemicals, furniture, cordage, cabinet making and creameries. Houston is one of the principal cotton ports of America.

There are in the city 105 public schools, a junior college, three private academies, a law school and a dental college. The Rice Institute, which has an endowment of about \$14,000,000, is a leading institution of higher education. The libraries of the city have a circulation of about 900,000 annually. There are 45 parks and playgrounds covering about 3,000 acres.

Important public buildings include the museum of fine arts, the Federal building, seventeen hospitals and 374 churches.

John K. and A. C. Allen bought 1,400 acres of land in 1836 and began the sale of building lots. The place was named in honor of General Sam Houston. The city has the commission form of government, adopted in 1907. Population, 1920, 138,076; in 1930, 292,352.

HOWARD UNIVERSITY, a non-sectarian institution for higher education at Washington, D. C. It was incorporated in 1867 and named after General O. O. Howard who led in establishing it. It has been open to all races but serves chiefly the descendants of freedmen.

The organization includes the colleges of liberal arts, medicine and pharmacy, and the schools of engineering and architecture, music, religion, and a graduate school.

The campus covers fifty-five acres on which there are twenty-two buildings. Financial support is derived from annual Congressional appropriations, student fees, endowment and philanthropic contributions. The faculty numbers over 270; there are more than 8,000 alumni and over 1,500 students.

HOWE, ELIAS (1819-1867), inventor of the sewing machine, was born at Spencer, Mass. He received a common school education and for several years was employed in a cotton-machinery manufacturing establishment at Lowell, Mass. While working in a machine shop in Boston he conceived the idea which resulted in the invention of the sewing machine. He perfected the machine in 1845 and patented it the next year. He was not successful in introducing it in America and so went to Europe, but there he received little encouragement. On his return from Europe he found manufacturers profiting by his invention. He prosecuted those who had infringed upon his rights, and in 1854, after years of wearisome lawsuits, his claim to priority was legally established, and eventually he earned a large fortune from his invention.

HOWE, JOSEPH (1804-1873), a Canadian statesman, the leader in Nova Scotia in securing responsible government. He learned the trade of printer and became a publisher and editor. He refused to unite with Mackenzie and Papineau in the Upper and Lower Canada Rebellion of 1837, though he vigorously attacked the existing evils in the government. In 1835 he was prosecuted for libel and defended himself. He won his case and became the idol of the province. He was elected to the legislature and aided in securing the liberties which he demanded as an editor. Mr. Howe remained in public life until his death in 1873. During his career he was successively speaker, secretary of state and premier of Nova Scotia. After the confederation he became a member of the Dominion government, and at the time of his death was governor of Nova Scotia. On several occasions he represented his province in England. He was noted as an orator and was the author of *Speeches and Public Letters*, *Life and Times of Howe*, *Western and Eastern Rambles* and *Legislative Reviews*.

HOWE, JULIA WARD (1819-1910), an American writer and philanthropist, a pioneer in the movement for woman suffrage, and the author of the most stirring song of Civil War days—*Battle Hymn of the Republic*. She was born in New York City of wealthy parents, and received an excellent education privately. Among the men of culture who frequented her father's house was Dr. Samuel Gridley Howe, superintendent of the Perkins Institution for the Blind, in Boston. Julia Ward and Dr. Howe were married in 1843. After a year spent abroad, they settled in Boston, the author's home for the rest of her life. She reared a family of five children, among whom was Mrs. Laura E. Richards, author of *Captain January* and other juvenile stories. The Howes were in the forefront of the antislavery movement, and in 1851 they founded and edited a journal advocating emancipation, the *Boston Commonwealth*. After the war Mrs. Howe took an active interest in many reform movements, including woman suffrage and prison reform. Her writings, besides the famous poem referred to above, include *Passion Flowers* (a volume of poems), *Sex and Education* and *Reminiscences*. See **BATTLE HYMN OF THE REPUBLIC**.

HOWE, WILLIAM, SIR (1729-1814), a British soldier, brother of Richard, Earl Howe. He served in America during the last French and Indian War, but returned to England and was elected to Parliament. At the opening of the American Revolution he condemned the British government's policy, but accepted a command in the British army in America, fought at Bunker Hill, was made lieutenant-general and succeeded Gage as commander in chief. After two successful campaigns, in which he won the battle of Long Island, occupied New York, and gained control of much territory around New York and in New Jersey, he sailed with part of his army to Chesapeake Bay. After the battle of Brandywine, his troops entered Philadelphia in the fall of 1777. His inactivity there led to an investigation. He was not censured, but he resigned his command and returned to England.

HOWELL, CLARK (1863-1936), one of the leading newspaper editors in America. He was born in Barnwell County, South Carolina, and was educated at the University of Georgia. In 1884, a year after graduation, he joined the staff of his father's newspaper,

the *Atlanta Constitution*, succeeding Henry W. Grady as managing editor in 1889, and becoming editor in chief on the retirement of his father, in 1897. Under his management the *Constitution* became the champion of rural education, improved agriculture and general progress in Georgia, and was equally vigorous in opposing graft and corruption. In 1929 the paper won the Pulitzer prize for the best public service of the preceding year—the exposé of the crookedness of the Atlanta City Hall politicians. Howell served in the Georgia house of representatives in 1886-1891, and was president of the state senate from 1900 to 1906. He was for years a member of the National Democratic Committee, and was one of the early supporters of Franklin D. Roosevelt.

HOWELLS, WILLIAM DEAN (1837-1920), an editor, a novelist, and a literary critic, the high quality of whose productions gave him the title "Dean of American letters." Howells was born at Martin's Ferry, Ohio, of Welsh-Quaker ancestry. He learned the printer's trade with his father and then went to Columbus, where, after working for some time as a compositor, he became assistant editor of the *Ohio State Journal*. In 1861 he was appointed United States Consul to Venice, and as a result of his four years in Italy, he published *Venetian Life* and *Italian Journeys*. On returning to America he wrote for the *Nation* and the *Tribune*, and in 1871 he became editor of the *Atlantic Monthly*. After a residence of several years in England and Italy, he edited for a short time the *Cosmopolitan* and later became associated with the editorial department of *Harper's Magazine*. In this editorial work he constantly championed the realistic novel and opposed the romantic school. He has written many farces, among them *The Elevator*, *The Sleeping Car*, *the Mouse Trap* and *The Register*, many essays on literary topics and some poetry. His more important novels include *A Modern Instance*, *The Rise of Silas Lapham*, *A Foregone Conclusion*, *A Hazard of New Fortunes*, *The World of Chance*, *Story of a Play*, *Ragged Lady*, *The Kentons*, *Letters Home* and *Their Silver Wedding Journey*. Later works mostly of a general literary character, include *Seven English Cities*, *The Seen and Unseen at Stratford-on-Avon*, *Years of My Youth* and *The Leatherstocking*. Howell's characters and situations are such as may be encountered

at any time in real life, and his style is admirably clear and easy. After his death his publishers produced *The Vacation of the Kelwyns* and *Mrs. Farrell*.

HOWITZER, the name of the most destructive gun used in modern warfare. The howitzer is shorter than the usual naval and field guns, and is built for the purpose of dropping heavy missiles on the enemy at an angle not obtained by any other gun. The largest howitzer now known is the German weapon with a caliber, or bore, of 17 inches, firing a huge shell of more than a ton in weight. The howitzer is usually elevated to fire at an angle of 45 degrees. The shell goes up into the air and drops with tremendous force on the trench or fort at which it is aimed. The howitzer is one of the oldest forms of cannon, and was used in Europe before the end of the fifteenth century. Previous to the World War the howitzer was almost supplanted by smaller guns, but after the destruction of the forts at Liege and Namur, by the new Krupp howitzers, this terrible gun was recognized anew as a weapon of an invincible class. Sometimes howitzers are used as mortars (see MORTAR).

HUBBARD, ELBERT (1850-1915), an American writer, and maker of fine books, born at Bloomington, Ill. He founded the famous "Roycroft Shop" in East Aurora, N. Y., which is devoted to handicrafts, and established *The Philistine*, a magazine of philosophy and criticism, notable for its epigrammatic style, its independence of conventionalities and its frank tone, marred at times by vulgarity. Afterwards he published *The Fra*, another magazine of criticism and discussion. He also wrote many essays, including *A Message to Garcia* and a series of *Little Journeys* to the home of authors, musicians, artists and philosophers. Hubbard lost his life when the *Lusitania* was sunk by a German submarine.

HUCKLEBERRY, or **WHORTLEBERRY**, a well-known shrub of the heath family, whose fruit is a small bluish berry. Familiar species are the swamp huckleberry, which sometimes grows to a height of ten feet or more, and the lowbush huckleberry, whose stem is from one to three feet in height. The swamp huckleberry bears white, bell-shaped flowers, and its blue-black berries are sweet and juicy. The name is also applied to several species of blueberry, whose fruits make such delicious pies and preserves.

HUDSON, HENRY (?-1611), an English navigator and explorer. He sailed from London in the year 1607, with only ten men and a boy, to discover the northeast passage, and proceeded beyond the 80th degree of latitude. Two later voyages for the same purpose were embarked upon and also proved fruitless. In 1609, in the employ of the Dutch East India Company, he sailed for North America and discovered the Hudson River, which he ascended to about the site of Albany. In 1610 he sailed in an English ship named the *Discovery*, and, in an effort to find a northwest passage to Asia, discovered Hudson Strait and Hudson Bay, where he spent the winter. His crew, after suffering many hardships, mutinied and set him adrift in a boat, along with his son John and seven of the most loyal of the crew, none of whom was ever heard from again.

HUDSON, N. Y., the county seat of Columbia County, twenty-eight miles south of Albany, on the Hudson River, at the head of navigation, and on the New York Central, and the Boston & Albany railroads. The city is beautifully situated on the slope of Prospect Hill. Prominent institutions are the New York State Training School for Girls, a State Fireman's Home, a home for the aged, a Y. W. C. A., and clubs for the Masons, Elks, and for boys. The various industries include conveying machinery, knit goods, children's dresses, men's shirts, insulation felt, handbags, potato chips, Portland cement, and tools. The place was settled in 1783, on the eastern shore of the Hudson River, under the name of Claverack Landing. Population, 1920, 11,745; in 1930, 12,337, a gain of over 5 per cent.

HUDSON BAY (not Hudson's Bay) a great inland sea in Eastern Canada, ten times larger than the state of Ohio and about the same size as the enlarged province of Ontario. Its area is about 400,000 square miles, including James Bay, at the south, and its average depth is about 425 feet. The outlet to the Atlantic Ocean is through Hudson Strait; to the Arctic Ocean, through Fox Channel and various lesser passages.

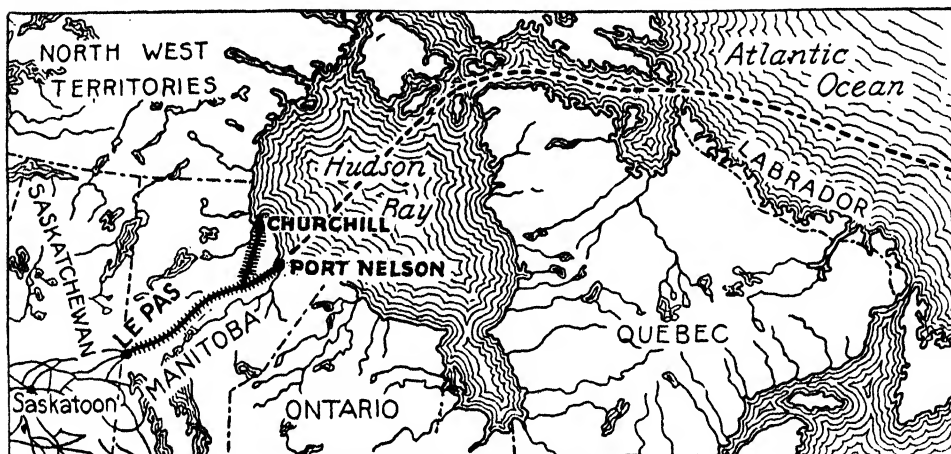
Hudson Bay is navigable for less than five months each year; the remainder of the year the harbors are icebound, although the bay never freezes. This body of water has heretofore been of little value to Canada except as the outlet of rivers which drain nearly 1,500,000 square miles of territory. Since the completion of the H. B. Railway and the

building of docks and an elevator at Churchill, it forms part of a new waterway to Europe (see below).

HUDSON BAY RAILWAY, a rail route from the heart of Western Canada to the west shore of Hudson Bay. The Canadian Northern Railroad built a line from Winnipeg to Le Pas (The Pass), Manitoba, and from that point the Dominion government

possibly, than the Thames at London or the Mersey at Liverpool.

Its whole course is over 300 miles, and it is navigable to Troy, 150 miles from its mouth, and for the largest vessels to Albany, six miles farther south. In the greater part of its course it is from one-half to one and one-half miles wide. Tide-water extends to Albany, making the lower half of the river more



THE HUDSON BAY RAILWAY

made an appropriation to extend the railway to Port Nelson. After the line had been extended to Port Nelson, at an expense of \$6,000,000, engineers reported in 1928 that the natural harbor at Churchill offered better facilities than Port Nelson, and Churchill was selected as the Hudson Bay terminus of the railway.

The object of the complete line is to join the great agricultural midwest to a port which shall be open to direct steamship connection with Europe (see HUDSON BAY, above). It is estimated that even with a short navigation season shippers to Europe can effect a saving of \$3,000,000 a year on freight charges for wheat alone.

HUDSON RIVER, one of the most important short rivers in the world. In the lower miles of its course it floats a merchant marine of vast extent, which penetrates to the remote corners of the world. For the greater part of its course the river is wholly in New York state, but in its lower twenty-five miles New Jersey claims its western shore. Here it flows between Manhattan Island and New Jersey, and it is in this section that as a waterway it is crowded with commerce only a little less in volume,

properly an estuary. At Glens Falls the Hudson has a fall of fifty feet. Great commercial power is now developed here by means of a dam. Because of its beautiful scenery, especially along the lower half, where its banks are high and rocky, the river is often called the "Rhine of America." The Palisades, near its mouth, are considered one of the most beautiful natural formations on the continent. Many thriving towns are situated along the river's course. Above New York City and Hoboken the most important are, in order, Yonkers, Peekskill, Newburgh, Poughkeepsie, Kingston, Hudson, Albany, Troy, Cohoes and Glens Falls.

Hudson River Tunnels. See TUNNEL.

HUDSON'S BAY COMPANY. In 1670 King Charles II granted a charter to a number of "adventurers," headed by Prince Rupert, the sole right to trade with the Indians on the shores of Hudson Bay. The company had power to "establish laws and impose penalties, to erect forts, maintain ships of war, and to make peace and war with any prince or people not Christian." Thus the Hudson's Bay Company, as this organization was known, was practically a government in itself, though subject to England.

For many years the company grew slowly. Conflicts with the French were almost continuous, and the difficulties of transportation were considerable. The turning point in the history of the company was the conquest of New France by the English. When Canada became English the vast territory of the company could be reached from the south by land as well as from the sea. Trade increased enormously and profits advanced in proportion. But this monopoly was too profitable to be left to the Hudson's Bay Company. Competition, sometimes amounting to an actual warfare, sprang up, in which numerous lives were lost.

The principal rival was the famous Northwest Company, in which Lord Selkirk was one of the leaders. After Selkirk's death in 1820 the chief obstacle to combination was removed and a year later the Hudson's Bay Company absorbed its principal rival. After the union of the companies the management of the company's affairs was placed in the hands of an official known as the governor of Prince Rupert's Land. Sir George Simpson, a young Scotchman, was chosen for the position, and for forty years he guided the company's fortunes. Under his aggressive administration, Great Britain's control of the Pacific coast was made secure and British Columbia was occupied, Russia and the United States were thus prevented from shutting out Great Britain from the Pacific Ocean. The territory of the Hudson's Bay Company at that time included practically all of the Northwest, reaching the Arctic Ocean on the north and the Pacific on the west.

Under the control of the company the fur trade continued to increase. Trading stations and forts were built in every part of the country until the "fur trade," the "Northwest" and the "Hudson's Bay Company" became almost synonymous. In 1859 the trade monopoly of the company was abolished, and ten years later it surrendered its territorial rights to the Dominion for an indemnity of £300,000 (\$1,500,000) and 7,000,000 acres of land. The trading stations and forts, all of which the company retained, dot the entire Northwest. From these various stations the furs are sent to posts on Hudson's Bay and in Labrador, or to Montreal, St. John or other Atlantic ports for shipment to England, where they are generally sold at auction. Though competition

has increased in recent years the Hudson's Bay Company is still the greatest fur company in the world; it exports about one-half of all furs sent from the Dominion.

HUERTA, *hwair'tah*, VICTORIANO (1844-1916), a Mexican soldier and statesman, leader of the revolt that deposed President Madero. General Huerta was of pure Indian blood. Born of poor parents, he would probably have remained obscure but for a chance visit of some soldiers to his native village. The general in command needed a secretary, and employed Huerta, whose ability so impressed the general that he took the boy to Mexico City. For many years he served in the army, but for good reasons seems to have been distrusted by Diaz. Yet when Diaz fled from Mexico in 1911, it was Huerta, then minister of war, who saw to his safe conduct, and even ordered the firing of a farewell salute. When Madero became President, Huerta was for a time commander of the federal troops, but he soon headed a counter-revolution which resulted in the overthrow and death of Madero.

Huerta now became President, and maintained his authority for over a year, in spite of the opposition of the United States and of the revolutions of the Constitutionalists led by Carranza. On July 15, 1914, he resigned and fled to Europe, where he remained until the next spring. He then settled near New York City, but after a few months started west, ostensibly to visit the exposition at San Francisco, but really to start a new revolt. In July, 1915, he was imprisoned at El Paso, Tex., for violating the neutrality of the United States. He was already in poor health; six months later he was released, to die outside the prison walls.

HUGHES, CHARLES EVANS (1862-), an American jurist and statesman, was born at Glens Falls, N. Y. He was educated at Colgate University, Brown University and Columbia Law School. In 1891 he was elected professor of law in Cornell University; later he was lecturer at the New York Law School. He first came prominently before the public in 1904 in his investigation, as counsel to the legislative committee of New York, of gas, electric light and power companies, and later of the great New York insurance companies. In 1906 and again in 1908 he was elected governor of New York. In 1910 he was appointed an Associate Justice of the United States Supreme Court.

In 1916 he received the Republican nomination for President, but was defeated. He served in the Cabinets of Presidents Harding and Coolidge as Secretary of State, 1921 to 1925, and was plenipotentiary representative of the United States and Chairman of the International Conference on Armaments at Washington in November, 1921. In 1926 he was appointed member of the World Court at The Hague, and resigned in February, 1930, to accept an appointment, by President Hoover, to be Chief Justice of the United States Supreme Court, in succession to William H. Taft.

HUGHES, RUPERT (1872-), a novelist, dramatist, and moving-picture director, was born in Missouri and educated in Western Reserve and Yale universities. His early work was as editor of *Godey's Magazine* and *Current Literature*, then for three years he was on the staff of the *Encyclopedia Britannica*. During the war years he was a captain of infantry and a major, and later lieutenant colonel in the reserve corps.

Hughes was the author of more than thirty novels; in a more serious vein he wrote *Love Affairs of Great Musicians*; *Fairy Detective* is a children's book. He produced a life of George Washington in three volumes, a monumental work. In the dramatic field he wrote *Excuse Me*, played simultaneously by several companies in the United States and taken to Australia. Other plays were *Alexander the Great*, *All for a Girl*, *The Bridge*, *Transformation*, *Uncle Zeb*, *The Cat Bird*, and *Tess of the Storm Country*. The last named was especially popular.

HUGHES, SAM, SIR, (1852-1921), a Canadian political leader who held the position of Minister of Militia and Defense in Sir Robert Borden's Cabinet at the outbreak of the World War. When word was received of the rupture between Germany and England, Sir Sam began at once to place the Dominion on a war footing. He organized four great training camps, and within six weeks had a trained and equipped division of 33,000 men ready to sail overseas. In 1916, because of criticism of his methods, he resigned, but up to that time he had trained almost 400,000 men.

Sir Sam was born in Durham County, Ontario. When a lad of fourteen he enlisted in the militia to oppose the Fenians (which see), and was an active member of the militia for thirty years. In 1869, he com-

pleted a course at the Toronto Normal School; later, having studied law, he taught for several years in the Toronto Collegiate Institute. Hughes was elected to the Dominion House of Commons in 1892, and since that date has represented Victoria County, Ont. He became Minister of Militia and Defense in 1911. The criticism which caused his resignation was said to be occasioned by his lack of tact and dictatorial methods.

HUGHES, hews, THOMAS (1823-1895), an English author who could portray with much sympathy and realism the incidents in the life of the typical English schoolboy of his time. His *Tom Brown's School Days* won him distinction; it is a clever revelation of boy nature. Authorship was only one of Hughes' activities. He enjoyed a long public career as an advanced Liberal in Parliament, was one of the founders of the Christian Socialists, and gave much of his time to the work of social uplift. In *Tom Brown at Oxford* he continues the career of his favorite hero, and in *The Scouring of the White Horse* and *Vacation Rambles* gives accounts of vacation trips. Other volumes are *The Manliness of Christ* and *Alfred the Great*.

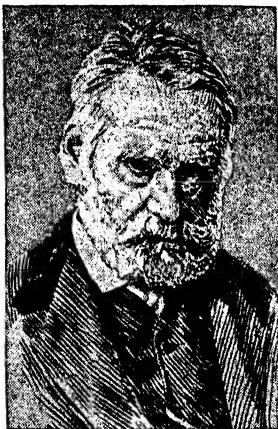
HUGLI, *hoog'ly*, or **HOOGLY**, a river of Hindustan, in Bengal, formed by the junction of two streams about fifty-five miles above Calcutta. It constitutes the principal channel of the Ganges delta. It is fifteen miles wide at its mouth, but much encumbered by shoals. Ships drawing twenty-two feet ascend as far as Calcutta. The second spelling above is now preferred.

HUGO, VICTOR MARIE (1802-1885), the greatest French poet of his century, a distinguished dramatist, essayist and novelist. The world knows him best as the author of that great epic of the human soul, *Les Misérables*. This book, published simultaneously in ten languages in 1862, is the story of Jean Valjean, a man lifted out of sin and degradation through experience and purified by suffering.

Victor Hugo was born at Besancon the son of a distinguished general. He was educated at Madrid and Paris, and as a boy was passionately devoted to the royalist cause and the Roman Catholic faith. In his later years he became an ardent champion of Democracy. In 1822 he published his first volume of verse, and in 1823 his first novel, *Hans of Iceland*, appeared, followed in 1825 by *Bug Jargal*. In 1826 a second volume of verse appeared.

and in these Hugo's anticlassical tendencies in style and treatment of subject became visible. The appearance of his drama, *Cromwell*, marked Hugo at once as the leader of the romantic school. *Hernani*, first presented

in 1830, was a further attempt to overthrow the classic drama in France, and the result of its presentation was a great conflict between Romanticists and Classicists (See DRAMA). Other plays followed, *Marion Delorme*, *The King Amuses Himself*, *Lucrèce Borgia* and *Ruy Blas*.



VICTOR HUGO

After 1843 Hugo forsook drama and turned his attention to other work. During the years in which he was chiefly occupied with dramatic composition, he had also published a novel, *Notre Dame de Paris*, and several volumes of poetry, among them, *Autumn Leaves* and *Twilight Songs*. The poetry of this period has a melody and grace perhaps superior to any that he afterward wrote, but it lacks that deep and original sense of life which is characteristic of his later poems.

In 1841 Hugo was elected a member of the French Academy, and in 1845 he was made a peer of France by Louis Philippe. The revolution of 1848 drew him into the thick of the political struggle. At first he favored Louis Napoleon, but afterward, whether from suspicion of Napoleon's designs or from other reasons, he became one of the chiefs of the democratic party. After Napoleon's seizure of power, in 1851, Hugo was one of those who kept up the struggle against him to the last. Then, while an exile in Brussels, he produced the bitterly satiric *Napoleon the Little* and *The Chastisements*, attacks on the Second Empire. Hugo went from Brussels to Jersey, but was expelled, along with the other French exiles, in 1855 by the English government. He settled in Guernsey, where he remained until 1870. It was during these years in the Channel Islands that he brought out *Les Misérables*. It was there he also published *The Toilers of the Sea*, and *The Man Who*

Laughs, besides the collection of poems known as *Contemplations*. After his return to France he was made a member of the National Assembly, but resigned and went to Brussels, where, on account of the communistic character of his writings, he was not allowed to remain. When he was past seventy he published his *Ninety-three*, one of the strongest of his novels, and several collections of poems.

HUGUENOTS, *hu'ge nots*, a name applied by the Roman Catholics to the Protestants of France during the religious struggles of the sixteenth and seventeenth centuries. The Huguenots were converts from Catholicism to Calvinism, and at first were heartily disliked by the court and by the great majority of the people. Under Henry II (1549-1559) the Protestant party grew strong, and under Francis II it became a political force, numbering among its supporters Henry of Navarre, his brother Louis, the Prince of Condé, Admiral Coligny and many others of high rank and ability. At the head of the Catholic party stood the Duke of Guise, and through the influence which he and his family exerted over the weak young king, a widespread persecution of the Huguenots commenced.

In 1560 Francis I died and during the minority of the next king, Charles IX, it was the policy of the queen mother, Catharine de' Medici, to encourage the Protestants in the free exercise of their religion, in order to curb the Guises. But in 1562 an attack on a Protestant meeting made by the followers of the Duke of Guise commenced a series of religious wars which desolated France almost to the end of the century. Catharine, beginning to fear that Protestantism might become a permanent power in the country, suddenly made an alliance with the Guises and between them they planned and carried out the massacre of Saint Bartholomew (Aug. 26, 1572). The Protestants fled to their fortified towns and carried on a war with varying success.

After the assassination of Henry III, the king of Navarre was obliged to embrace the Catholic religion (1593) in order to hold his kingdom together. Five years afterwards he issued the Edict of Nantes, which secured to the Huguenots their civil rights and made them eligible for all offices and dignities. This edict afforded them the means of forming a kind of republic within the kingdom,

which Richelieu, who regarded it as a serious obstacle to the growth of the royal power, resolved to crush. War was waged from 1624 to 1629. The Huguenots had to surrender all their strongholds, although they were still allowed freedom of conscience under the ministries of Richelieu and Mazarin. But when Louis XIV and Madame de Maintenon set the fashion of devoutness, a new persecution of the Protestants commenced. The Edict of Nantes was revoked in 1685, and more than 500,000 Protestants left the country. In the reign of Louis XV a new edict was issued, repressing Protestantism, but so many voices were raised in favor of toleration that it had to be revoked. The Revolution put the Protestants and Catholics on an equal footing.

Related Articles. Consult the following titles for additional information:

Bartholemew's Day,	Colligny, Gaspard de
Saint	Gulise
Calvin, John	Henry IV (France)
Catharine de' Medici	Nantes, Edict of

HULL, or KINGSTON-UPON-HULL, ENGLAND, a river port and county borough, situated in the East Riding of York, at the influx of the Hull into the estuary of the Humber, on the North Sea coast. The city's situation is on an unpicturesque plain, though the new portion of the city itself is well arranged and presents an attractive appearance. Among the important buildings is Trinity Church, built in 1412; there is a grammar school which dates from 1486. Hull is the seat of several educational institutions, none of which is of more than local importance. The industries of the town are varied, comprising flax and cotton mills, ship building yards, rope and sail works, iron foundries, machine-making, seed-crushing, color-making, oil-boiling and many other and allied industries; but its importance arises chiefly from its shipping commerce, Hull being one of the important ports in importance in the kingdom; the docks are among the largest in the world. The city owns the markets, the tramways, as the street car lines are called, the lighting plant, the water supply, libraries, baths, a sanitarium, a crematorium, cemeteries and a sewage disposal plant. It is an ancient town, and was of some importance long before it received its charter from Edward I in 1298. Population, 1931, 313,366.

HULL, QUE., the capital of Hull County, on the Ottawa River, opposite Ottawa, Ont.

The surrounding country contains both agricultural and mineral resources, and is traversed by the Canadian Pacific Railroad and by electric lines. The principal manufacturing establishments are iron foundries, paper and pulp mills, pork-packing houses and lumber mills.

HULL, WILLIAM (1753-1825), an American soldier, born in Derby Conn. He served in the American army during the Revolution, attaining the rank of lieutenant-colonel. In 1805 he became governor of the Territory of Michigan. He was promoted to brigadier-general in the War of 1812 and commander of the northwest. He was court-martialed in 1814 for surrendering Detroit, and was sentenced to be shot, but President Madison remitted the penalty.

HULL HOUSE, one of the most famous social settlements in America, founded in Chicago in 1889 by Miss Jane Addams and Miss Ellen Starr. Located in a district populated by poor people in which foreigners largely predominate, the aim of the founders was to provide wholesome recreation and cultural advantages for the under-privileged people of the community. For more than forty-five years, until her death in 1935, Hull House was under the active management of Miss Addams.

The original building, formerly the home of a wealthy Chicago manufacturer, has been greatly enlarged from time to time to provide for the increasing activities of the institution. The buildings comprise adequate quarters for the resident staff of workers, a gymnasium, a restaurant, rooms for boys' clubs, working girls' club rooms, and a community theater in which the people of the community give amateur plays. Instruction is provided in various trades and handicrafts, in art and music, and in regular school subjects.

Hull House is a monument to the life and character of Miss Addams. See **ADDAMS, JANE**; **SOCIAL SETTLEMENTS**.

HUMANE SOCIETIES. See **CRUELTY TO ANIMALS**, **SOCIETY FOR THE PREVENTION OF**; **CRUELTY TO CHILDREN**, **SOCIETY FOR THE PREVENTION OF**.

HUMBERT I (1844-1900), king of Italy, eldest son of Victor Emmanuel II. In the war of 1866, in which Italy joined Prussia against Austria, he took the field in command of a division and distinguished himself for his valor. In 1868 he married Mar-

guerita of Savoy, and in 1878 succeeded to the throne. Humbert endeared himself to his subjects by his personal efforts in behalf of flood, earthquake and cholera victims, but his foreign policies, by increasing taxes, somewhat diminished his popularity. He sought the colonial expansion of Italy in Africa, and in 1896 his army suffered a crushing defeat at Adowa in Abyssinia (Ethiopia). This defeat, ranking in the minds of the Italian people for forty years, was avenged in 1936 by the forces of Mussolini. Humbert unwittingly encouraged the outbreak of another war by advocating the Triple Alliance between Italy, Austria and Germany, in 1891. In the World War, however, Italy deserted her Germanic allies. Humbert was killed by an anarchist in 1900, and was succeeded by his son Victor Emmanuel III.

HUMBOLDT, *hum'boht*, FRIEDRICH HEINRICH ALEXANDER, Baron von (1769-1859), a German traveler and naturalist, the founder of the modern science of physical geography. Although born at Berlin, he was brought up at Potsdam, and he studied at the Universities of Frankfort-on-the Oder, Berlin and Göttingen. His first work was *Observations on the Basalt of the Rhine*. In 1791 he studied mining and botany at the mining school in Freiberg, and subsequently became overseer of the mines in Franconia. He resolved to make a scientific journey in the tropical zones and arrived in Cumana, in South America, in 1799, and spent five years in exploring the region of the Orinoco and the upper part of the Rio Negro, the district between Quito and Lima, the City of Mexico and the surrounding country and the island of Cuba. In 1804 he returned to Bordeaux, bringing with him an immense mass of fresh data in geography, geology, meteorology, botany, zoölogy and every other branch of natural science. Humboldt selected Paris as his residence, as no other city offered so many aids to scientific study, and remained there, arranging his collections and manuscripts and preparing an account of his journeys in South America and their scientific results.

In 1827, Humboldt, who had been offered several high posts by the government of Prussia, and had accompanied the king on several journeys as part of his suite, was persuaded to give up his residence at Paris and settle at Berlin, where he combined the study of science with a certain amount of

diplomatic work. In 1829, under the patronage of Czar Nicholas, he made an expedition to Siberia and Central Asia, which resulted in some valuable discoveries, published in his *Central Asia*. In 1845 appeared the first volume of the *Cosmos*, his chief work, a vast and comprehensive survey of natural phenomena, in which is set forth the idea of the unity of all the forces of nature.

HUME, DAVID (1711-1776), an eminent English historian and philosopher. He was trained for the law, but was drawn away by his love of literature and philosophy. In France, during three years of quiet and studious life, he composed his *Treatise upon Human Nature*. The work, in his own words, "fell deadborn from the press." His next work, *Essays, Moral, Political and Literary*, met with a better reception. In 1746 and 1747 he accompanied General Sinclair in his expedition against France and in a military embassy to Vienna and Turin. He then published a recasting of his earliest work, under the title *Enquiry Concerning the Human Understanding*. In 1752 he published *Political Discourses*, which were well received, and *Inquiry Concerning the Principles of Morals*. The same year he obtained the appointment of librarian of the Advocates' Library, at Edinburgh, and began to write a *History of England* the first volume of which appeared in 1754. This was received with the highest praise and greatly increased his reputation.

As a philosopher, his contention was that there could be no mental experience apart from sense impressions and the ideas which are the direct reproduction by memory of these impressions.

HUMIDITY, the state of the atmosphere with respect to the amount of vapor it contains. The atmosphere is supplied with vapor by evaporation from the sea, rivers and lakes, the ground and plants. The amount of vapor that the air can contain depends upon its temperature, its capacity increasing as the temperature rises. When the air contains all the vapor that it can hold at a given temperature, it is said to be *saturated*. Next to oxygen and hydrogen, vapor is the most important constituent of the atmosphere. Dew, fog and rainfall depend upon its presence, and when existing in large quantities it is the principal cause of tornadoes and other violent storms. Vapor also equalizes the temperature. It

reflects back to earth the heat which is radiated into the air, serving as a blanket to prevent the escape of heat. Without this prevention there would be much greater contrast between the temperature of day and night and of summer and winter than at present.

Too little moisture in the air is injurious to the health, and some provision should be made to keep the air from becoming too dry in houses heated by steam or hot water. Pans of water placed on radiators are helpful in some cases. The amount of humidity in the atmosphere is measured by the hygrometer.

Related Articles. Consult the following titles for additional information:

Climate	Dew	Hygrometer
Cloud	Fog	Rain

HUMMING BIRD, a beautiful little bird, of which there are more than 400 species, living exclusively in America, abounding especially in the tropics. Only eighteen of these are found in the United States. The name is given the birds because of the sound made by their rapidly moving wings in flight. Some humming birds are not larger than a bumblebee, and the largest do not exceed the sparrow in size. They have slender beaks, which are generally long and sometimes curved. The tongue is long, threadlike, forked at the point and capable of being protruded from the bill to a considerable distance.



Humming birds never light to take food, but hovering before a flower, supporting themselves by the rapid vibrations of their wings, they search the blossom for insects, which form a great proportion of their food, and for the honey which the plants secrete. The little creatures are fearless, and will feed from the hand of a person who has gained their confidence. They build nests of wonderfully fine workmanship, which are lined within with soft wool and usually covered on the outside with lichens, which serve to conceal the nest. Two small eggs are laid, and they are always plain white. There are many species in the United States, but the only one found east of the Mississippi River is the

ruby-throated humming bird. The tropical species vary remarkably in outward appearance. Some are plainly colored, while others are ornamented in numberless ways by brilliant patches of color on the throat, long graceful feathers in the tail, crests, ruffs, bunches of feathers upon the legs and a brilliant metallic luster to the feathers.

HUMPERDINCK, *hoom'per dingk*, ENGELBERT (1854-1921), a German composer, best known for his operas *Hansel and Gretel*, *The Snow Maiden* and *Children of the King*, founded on familiar fairy tales. These possess a delicacy and freshness peculiarly well adapted to the subjects. He was a special friend and protégé of Richard Wagner for the last few years of the great composer's life and gained renown as a vigorous supporter of the modern movement in music, which was given its first great impetus by Wagner. Among his larger and more important compositions is a *Symphony in C*. Although his works are not numerous, the quality of them all is high.

HUMUS, vegetable matter in a state of decomposition. Humus is rich in nitrogen, the material out of which the gluten in grains is produced, and it helps to conserve moisture in the soil and also improves its texture. Air space in the earth increases with the amount of humus. It may be added to the soil by the plowing under of green crops and by the application of barnyard manure.

HUNDRED YEARS' WAR, the name given to the struggle between France and England, which lasted with intermissions from 1337 to 1453. Edward III of England claimed the crown of France because his mother had been a sister of Charles IV of France, and this claim, together with minor differences, brought on the war. Although war was declared in 1337, the Battle of Crecy, fought in 1346, at which firearms were first used, was the first important engagement. Ten years later, at Poitiers, the French were again overwhelmingly defeated, but in spite of these advantages the English gradually lost ground, and Du Guesclin succeeded in driving them from the country, so that when Charles VI came to the throne of France, England had practically no hold there. When, however, in 1415, war broke out, France was so greatly disturbed by internal conflicts that she could make no head against her enemy, and Henry V was able in 1420 to compel Charles VI by the Treaty

LUSCIOUS HARVEST FROM THE VINE

Hungarian peasants assert that their grapes absorb gold from the soil; they glory in the quality of their wine.

of Troyes to recognize him as his heir. In 1429, inspired by Joan of Arc, France forced the English to evacuate all French territory except Calais. This they did not give up until a century later.



Peasant going to market

HUNGARY, a nation in the central part of Europe, formerly one of the main divisions of the great Austro-Hungarian monarchy. Hungary is bounded on the north by Czechoslovakia, on the east by Rumania, on the south by Jugo-Slavia, and on the west by Austria. The new Hungary covers an area of 35,875 square miles, as compared with 125,641 square miles of area included in the domain of the kingdom when it

was a part of the dual monarchy.

The old Hungarian kingdom was made up of Hungary proper, Transylvania, the crownland of Croatia and Slavonia, and the Adriatic seaport, Fiume. The empire of Austria, comprising the other unit of Austro-Hungary, lay in the form of an arc about Hungary, bordering on the west, north and northeast. The remaining portion of the original kingdom was an oval-shaped territory bordered on the northeast by Galicia, on the east by Bukowina and Rumania, on the west by Lower Austria and Styria, on the south by Serbia and Rumania, and on the north by Moravia and Silesia.

Physical Features. The distinguishing feature of Hungary's landscape is the wide-spreading Danubian plain, one of the most fertile regions in Europe, which stretches from the Danube to the highlands in the north and east. Two navigable rivers flow through this plain from north to south. The western portion of the country is rolling; but east of the Danube the land is level and produces fine crops.

The People. About ninety per cent of the people occupying this central plain are of Magyar descent; that is, are descendants of the tribes who conquered the territory and settled it more than 1000 years ago. There is a considerable mixture of German blood; the remainder of the population is

of other races, the bulk of whom are Jewish. The total population in 1930 was 8,688,319. Budapest, the capital and principal city, has a population of over 1,000,000.

As compared with the great mixture of racial elements in the old Hungarian kingdom as they were represented before the war, the present population is, as noted above, fairly homogeneous. At the outbreak of the World War in 1914 the population of the kingdom was about 22,000,000, and there were too many different elements in the population for political harmony. The ruling class and chief land-owning element was the Magyar (Hungarian) group, comprising somewhat less than one-half of the population. Of Croats and Serbs, found chiefly in Croatia and Slavonia, there were about 3,000,000. In Slovakia, in the northern part of the kingdom, there were about 2,000,000 Slovaks. Hungary also then had about 3,000,000 Rumanians, over 2,000,000 Germans, 500,000 Ruthenians, and a large number of gypsies, Armenians and Bulgarians.

Agriculture. Wheat is the great agricultural crop and flour the chief agricultural export. Rye, both grain and flour, barley, oats, corn, potatoes and sugar beets are also important crops. The breeding of horses and cattle is a leading industry. Sheep are raised both for wool and for pelts. Hungarian wines of excellent quality are produced.

Manufacture and Trade. Among the leading industries are metallurgy, the manufacture of machinery, stone quarrying, pottery making, woodworking, tanning, paper making, milling, sugar manufacturing, etc. The principal exports are food products, chiefly wheat, potatoes, sugar and animal products. The imports are clothing, machinery, fertilizer and manufactured goods.

The high tariff barriers erected throughout Europe between 1920 and 1930 seriously interfered with the exchange of goods between the various countries, and Hungary, in common with other countries, suffered severely from the diminution of its trade.

In November, 1918, the republic of Hungary was proclaimed at Budapest, with Count Michael Karolyi as President. The revolution which preceded this step was orderly and unopposed. Karolyi succeeded in welding together for common action his own party (the aristocratic), the Social Demo-

crats, the middle classes and the radicals, but lack of food, scarcity of funds and the general demoralization of the times proved serious obstacles against the formation of a stable régime, and in March, 1919, a new revolution, led by Bela Kun, overthrew the Karolyi government. A communistic government was then set up in Budapest, but it lasted only a few months. In 1920 a new Parliament was elected and Admiral Nicholas Horthy was elected Regent. Charles I, late ruler of Austria-Hungary, made two attempts to regain his throne but without success, and he was banished to Madeira, where he died. Under the Hungarian Constitution, the nation is considered a monarchy with a vacant throne, the functions of the monarch being exercised by the Regent.

The question of the restoration of the dynasty has been subordinated to the problems of economic and financial recovery which have pressed for solution. Former Empress Zita, consort of Charles I, through the years after his death made repeated efforts to regain the throne for the Hapsburgs in the person of her eldest son, Otto. She lived at various times in Madeira, Switzerland, and the Scandinavian countries, with her family of five children, and with grim determination kept her son's claim before the Hungarian people. So long as success seemed remote, interested European nations made no open protest, but in 1935, when Otto's claim apparently came near to realization, neighboring countries declared that a Hapsburg would not again be recognized. As a forerunner of the expected return, the confiscated royal estates were restored to the family.

The government has inaugurated broad plans for social betterment, including a breaking up of the estates of the aristocratic land owners in the interest of small farmers.

Related Articles. Consult the following titles for additional information:

Budapest	Jugo-Slavia
Croatia and Slavonia	Rumania
Czechoslovakia	World War
Fiume	

HUNGER is the desire for food. The physical cause which gives rise to the craving for food is not understood, but physicians agree that it is a natural sensation having positive value in regard to health. It may be called the body's call for nourishment. A healthy normal appetite is one of the best evidences of good health. Those who must have the appetite stimulated by

tonics are not up to par, and those who crave overseasoned foods and strong relishes have ruined the natural appetite by self indulgence. It is a good rule to eat slowly, so as to appease the appetite before the stomach becomes overloaded. The person who works up a keen appetite by exercise or hard manual labor should avoid overeating, as this is a menace to health.

HUNS, a nomadic and warlike people, generally considered to have been a collection of tribes of Turks-Tatar relationships, who figure in Chinese annals as making incursions and founding states in Central Asia as early as the second century B. C. As their numbers increased, the most warlike later went west and northwest in search of new homes. They appear again in the fourth century A. D., when part of them entered Europe. A large number established themselves on the banks of the Volga and the Don, overcoming the resistance of the native tribes. A successful invasion of the country of the Ostrogoths led to the extension of their dominion along the Danube until the time of Attila (A. D. 434), who united the whole Hunnish power and became the most powerful prince of his time. The Huns advanced as far west as Gaul but were finally defeated. With Attila's death, about 454, the power of the Huns was broken, and within a generation the great Hunnish empire had completely disappeared. See **ATTILA**.

HUNT, HELEN FISKE. See **JACKSON**, HELEN FISKE HUNT.

HUNT, JAMES HENRY LEIGH (1784-1859), an English poet and journalist, was born at Southgate and educated at Christ's Hospital, London. In 1808 he helped his brother to establish a paper called the *Examiner*, and he edited this for thirteen years. For lampooning the Prince Regent he was fined £500 (\$2,500) and imprisoned for two years. After his release he published *The Story of Rimini* and *Foliage*, a volume containing both original and translated poems. In *Lord Byron and Some of his Contemporaries* he gives his side of a quarrel with Byron over their magazine, *The Liberal*. Hunt's *Autobiography* is a complete and faithful record of his career. The titles of his books include *Men, Women and Books*; *A Jar of Honey from Mount Hybla*; *Imagination or Fancy*; *Wit and Humor*; *Palfrey*; *A Love Story of Old Times*; *Legend of Florence*, a play; and *Book of the Sonnet*.

HUNT, WILLIAM HOLMAN (1827-1910), an English painter, one of the founders of the Preraphaelite Brotherhood, and a consistent representative of that movement. He was born in London, trained in the Royal Academy School and began to exhibit in 1846. His first picture to attract attention was *Claudio and Isabella*, exhibited in 1853. This was followed by an allegorical representation of Christ as "the light of the world." Hunt made a trip to the East early in his career, the fruits of which are observable in the local coloring and realism of his succeeding pictures of Eastern life, among which are *The Scapegoat*, *The Finding of the Savior in the Temple*, *Shadow of Death* and *Triumph of the Innocents*. He was one of the foremost modern exponents of Christian art, and his work is marked by strong religious feeling.

HUNT, WILLIAM MORRIS (1824-1879), an American painter, born at Brattleboro, Vt., and educated at Harvard University. He studied in Europe, where he became a close friend and follower of Millet. He returned to the United States in 1855. In all his work he showed a remarkable technic and a fine feeling for color. Among his most important paintings are *The Flight of Night* and other mural decorations in the New York State capitol at Albany, several portraits of famous Americans and numerous figure subjects, many of which hang in the Boston Museum, notably *Marguerite*, *The Hurdy-Gurdy Boy* and *Girl with the Kitten*. In later life he devoted himself to landscape painting.

HUNTING, a sport which has been popular with mankind from the earliest times and which is still indulged in by all civilized people, though for years it has been decreased greatly by protective laws. In the United States, and Canada as well as in most countries of Europe, there are game laws which forbid shooting during the breeding season and which restrict the sport to a very limited period each year. Certain animals which are destructive, however, may be hunted at all times, and in many states a premium is placed on their death. See **GAME**.

Since the invention of firearms the killing of game by shooting is the most common way. The use of dogs to detect the presence of game and to rouse it is common, though in many localities the hunting of deer and

other animals with dogs is forbidden. Among the game birds those most sought for are the partridge, the grouse, the plover, the quail, the woodcock and various species of ducks though in different localities there are other birds almost equally favored. Among the mammals, squirrels, hares, rabbits and deer are most highly regarded. In most states little restriction is placed on hunting squirrels and rabbits, but the open season for deer is very short, sometimes not exceeding fifteen days in the course of a year.

"Hunting with the camera" has become very popular with people who believe that innocent animal life should not be sacrificed. Often more skill is required to approach near enough to take a "snap-shot" at an animal than to aim with a gun and take a deadly shot at it.

The refinements of modern life have taught us the charm that many wild animals possess and have led to the protection of song-birds and other harmless creatures to such an extent that in many cities and towns the squirrels are familiar, everyday visitors to homes, where they are fed and guarded by the children, instead of being hunted as they were formerly. The public schools have done much to educate children to see in the birds a beauty that is utterly destroyed when life is extinct, and accordingly a saner regard for them is growing among the people.

So long as there is a demand for game for the table, or for furs and plumage for wear and decoration, there will be hunting for the market, and professional hunters and trappers will continue to make their living, but it is not probable that hunting as a sport will increase in popularity.

HUNTINGTON, IND., the county seat of Huntington County, twenty-five miles southwest of Fort Wayne, on the Little River and on the Wabash and the Erie railroads. The city has water power, and the manufactures include shoes, brake linings, rubber goods, cedar chests, refrigerators, soap, and chemicals. There is also a trade in coal, lime and agricultural produce. A United Brethren college is near the city. A Federal building, one of the best courthouses in the state, a Carnegie Library and a city hall are among the important buildings. Population, 1920, 14,000; in 1930, 13,420, a loss of about 4 per cent.

HUNTINGTON, W. VA., in 1920 the second city in the state and the county seat

of Cabell County, is fifty-two miles west of Charleston, on the Ohio River and on the Baltimore & Ohio, the Norfolk & Western, and the Chesapeake & Ohio railroads. There is an airport. The city is an important commercial center, and it has railroad shops, planing mills and manufactories of furniture, clothing, paints, glass, stoves and other articles. The West Virginia Asylum for Incurables and Marshall College, which is the state normal school, are located here. There are hospitals, a Federal building, large concrete stadium, a city auditorium, and a Carnegie Library. The place was settled in 1871, and named in honor of Collis P. Huntington. This is the largest city in the state. Population, 1920, 50,177; in 1930, 75,572.

HUNYADY, *hun'yah dy*, JANOS (about 1387-1456), a national hero of Hungary, renowned for his service in expelling the Mohammedans from Central Europe. In all the wars against the Turks, which were agitating his country, he took a prominent part. When at the Battle at Varna, in 1444, the Hungarian king, Ladislas, was killed, Hunyady was made regent during the minority of the new king, Ladislas Posthumus. Four years later he was defeated at Kossovo in Serbia and was held a prisoner for a time by the Serbians. His greatest victory was won in 1456 over Mohammed II, the conqueror of Constantinople, who was attempting the siege of Belgrade. Hunyady died a few days after this battle.

HURDLING, a foot race in which the contestants must leap over barriers called hurdles. In accomplishing this they endeavor to rise the least possible distance from the ground, and sometimes their feet graze the hurdles and even knock them down. Generally, however, the upsetting of a specified number of hurdles puts a man out of the race. There are two sets of contests—the *high hurdle* and the *low hurdle*. In the former the hurdles are three and one-half feet high; in the latter they are two and one-half feet. Ten hurdles are generally used in a race.

HUR'DY-GUR'DY, a medieval musical instrument. It consists of an oval, flat sounding board, across which strings are stretched, and a hollow chamber like that of a mandolin. With one hand the performer presses the finger keys, and with the other turns a crank attached to a wheel at one end, which acts as a bow. The name *hurdy-*

gurdy is also applied to the hand organ of the streets, which is built upon the same principle, the wheel being replaced by a cylinder supplied with pegs, which, as the cylinder is revolved, pick the strings or press valves in pipes, admitting air currents which produce the tones.

HURON, a powerful tribe of Indians that lived east of Lake Huron near Georgian Bay. When Champlain knew them in 1609, the Huron were allied to the Algonquian tribes and were at war with the Iroquoian, although the Huron naturally belonged to the latter group. Champlain, adopting the cause of the Huron, engaged in two expeditions against the Iroquois, in both of which he was successful. Naturally, the Huron became loyal allies of the French and accepted the teachings of the Jesuits, but the Iroquoian tribes, having learned the use of firearms, were too strong for their Huron enemies and ultimately drove the latter out of their country. Fleeing southward, they settled after many years on the site of the present city of Sandusky, O., where they became known as the Wyandotte Indians. About 300 of the tribe live in Oklahoma on a reservation, and there are a few hundred in Quebec and Ontario.

HURON, LAKE, one of the Great Lakes of North America, lying between the province of Ontario and the state of Michigan. The international boundary passes through the center of the lake, but including the great Georgian Bay (which see) Canada controls the greater part of the water surface. Drummond Island belongs to Mackinac County, Mich., the other islands are within the jurisdiction of Ontario.

Lake Huron receives the waters of Lake Superior through Sault Ste. Marie River and those of Lake Michigan through the Strait of Mackinac, which is eight miles wide. Its outlet is the Saint Clair River, into Lake Saint Clair. It is second in size among the Great Lakes, Superior alone being larger, but Lake Michigan is only slightly smaller. Its area is 23,800 square miles, a little less than that of West Virginia. The surface of Lake Huron is twenty-one feet below that of Lake Superior, and is 581 feet above sea level, the same as that of Lake Michigan. The length of the lake is about 250 miles, its greatest width 190 miles, and its depth from 200 to 700 feet. There are few good harbors, the best being Saginaw

Bay and Thunder Bay on the west shore. Its principal ports are Goderich and Kincardine, Owen Sound and Collingwood, Ont., and Bay City, Saginaw, Alpena and Cheboygan, Mich. See **GREAT LAKES** for comparative chart.

HUR'RICANE, the name given to a class of violent storms that form in the region of the West Indies. These occur only during the late summer and autumn, are most frequent in September and October, and are caused by the intense heat over portions of the sea where they originate. The wind blows in a circular course, whose direction is contrary to that of the hands of a clock. In the center of the storm no rain falls, and as the current is upward, no wind is perceived. This area is characterized by a heavy sea and frequently by a clear sky, for which reason it is termed the *eye* of the storm. The intensity of the storm is greatest near the place of its origin and diminishes as the diameter of the circle covered increases. This diameter is at first from 100 to 300 miles, but it may increase to a thousand miles or more. At the beginning the velocity of the wind is very great, being estimated in some instances as high as 200 to 300 miles an hour, and the rain falls in torrents.

These storms generally move toward the northwest until they reach the coast of the United States, when they turn toward the northeast and follow the coast from about the latitude of Cape Hatteras to Nova Scotia. As they advance their area increases and their violence diminishes, but they usually cause heavy rain or snow, and occasionally the wind is of such force as to cause considerable damage to shipping and to towns along the coast. The most extensive hurricanes extend inland as far as Indiana, but by the time a storm has reached this limit, its force has been expended.

Related Articles. Consult the following titles for additional information:
Cyclone Typhoon
Tornado Wind

HUSBAND AND WIFE, the legal relation of a man and a woman who are married to each other (see **MARRIAGE**). The relations existing between husband and wife have within less than a century undergone a marked change. According to the old English common law, at marriage the person of the wife was merged with that of the husband and all of her personal and property rights were transferred to him. Many of the common law

principles, however, have been changed by the development of equity in England and of statute law in America, so that to-day the relations between husband and wife are in most respects those of practical equality.

Of the common law rules which still prevail, though in some ways modified by statute and equity, the following are of most importance:

(1) It is the husband's right to determine the place of residence and the wife's duty to live with the husband, her legal residence being identical with his.

(2) It is the husband's duty to provide support for the wife in accordance with his income and ability, and it is the wife's duty to render such domestic service as is reasonable and necessary.

(3) The common law rule that at marriage the husband becomes the absolute owner of the personal property and has the management and obtains the profits of all the real estate or the wife is still in force in some jurisdictions, but has now been generally changed so as to allow the wife to possess a separate estate, over which she has general direction. The husband's right may also be somewhat limited by a pre-marriage or post-marriage settlement.

(4) The husband is liable for debts contracted by the wife before marriage.

(5) The husband is liable for civil offenses committed by the wife during married life. If these offenses or crimes are committed in his presence, the presumption is that they were done under coercion, and the wife is not found guilty unless this presumption is overcome.

(6) The husband after marriage has the same power to make contracts as before, but the power of the wife in this direction is lost, except in cases involving her separate estate. She may, however, act as the agent of her husband in purchasing necessities for the home.

(7) The wife cannot dispose by will of either real or personal property, except of her separate estate.

(8) At marriage the wife attains a so-called dower right in an undivided one-third of the husband's real property. The latter therefore cannot convey real property without the consent of his wife, who thereby forfeits her dower right in the same.

(9) Neither husband nor wife is a competent witness in cases in which the other is a party, except in certain cases instituted in order to secure protection of one against the other.

(10) Formerly, neither husband nor wife could sue the other, the only remedy against civil injuries being in separation or divorce; but now the courts of most countries allow the wife to sue in equity for certain rights recognized in equity, such as those established by settlement. See **DIVORCE**.

HUSS, JOHN (1373-1415), a Bohemian religious reformer and martyr, who was a link in the reform movement between Wy-

cliffe and Luther. He studied philosophy and theology in the University of Prague, and became professor in the university in 1398. Later he was made dean of the philosophic faculty and preacher for the Bohemians, having been ordained priest in 1401. At this time the writings of the English reformer Wycliffe were publicly read in Prague, and they so fascinated Huss that he made a translation into Bohemian. His translation was widely circulated among the people and attracted considerable attention.

Huss next openly criticized the censures pronounced by the Church on the writings of Wycliffe, and in his sermons he gave the latter unstinted praise, at the same time violently denouncing what he regarded as ecclesiastical abuses. Consequently, Pope Alexander issued a bull prohibiting preaching outside of collegiate, monastery and parish institutions. Huss defied the papal ban and was called to Rome by John XXIII to defend his principles. Refusing to comply with the summons of the pope, he was excommunicated in 1411. But setting aside all authority, he undertook, together with Jerome, a public denunciation of papal indulgences. For this action he was expelled from Prague.

In exile he wrote his *Tractatus de Ecclesia*, which denied all Church authority. Through the influence of the pope, King Wenceslaus and Emperor Sigismund prevailed on Huss, under promise of a safe conduct, to present himself before the Council of Constance, which opened on November 5, 1414. Huss was placed in the Dominican monastery near Lake Constance. He had three hearings before the Council, which condemned his doctrines as heresy and turned him over to the civil authorities. The laws of the empire at this time regarded heresy as a civil offense and provided death for refusal to retract it. Huss was accordingly condemned to be burned at the stake. The sentence was executed July 6, 1415. See HUSSITES.

HUSSITES, the followers of John Huss (see HUSS, JOHN). After the death of Huss, his adherents took up arms for the defense of their principles, and under the leadership of Ziska, captured Prague, fortified Mount Tabor and repeatedly defeated the troops sent against them by the emperor Sigismund. Ziska died in 1424 and was succeeded by Procopius, who also distinguished himself by many victories. The excesses of this party, however, who were called the Taborites, alien-

ated the other Hussites, who called themselves Calixtines. These latter finally united with the Catholics. The Taborites afterward declined as a political party, finally becoming merged in the Bohemian Brethren.

HUTCHINS, ROBERT MAYNARD (1899-), a leading American educator, President of the University of Chicago, was born in Brooklyn, N. Y., and educated at Oberlin College and Yale University, receiving his bachelor's degree from the latter in 1921 and the law degree in 1925. From 1923 to 1927 he was secretary of Yale, lecturer in the Yale Law School, 1925-27; professor of law, 1927, and active dean until 1929, when he was called to Chicago.

During the World War he was with the ambulance service in France, 1917-18, and with the Italian army, 1918-19.

Under his administration, the University of Chicago radically revised its educational organization.

HUTCHINSON, ANNE (about 1590-1643), a religious enthusiast in colonial America, born in Lincolnshire, England. She married William Hutchinson and in 1634 migrated to Boston, Mass. She had peculiar theological views, held meetings, lectured and denounced the Massachusetts clergy. She was tried for heresy and banished from the colony, and with some of her friends she went to Rhode Island and started a settlement at Portsmouth. At the death of her husband she went to a new settlement in New York, where she and all but one of her daughters were massacred by the Indians.

HUTCHINSON, THOMAS (1711-1780), the last royal governor of Massachusetts. He was born in Boston and was graduated from Harvard College. Hutchinson early became prominent in political affairs, and finally became chief justice of the colony. While occupying this office he issued the famous Writs of Assistance, which authorized British officers to enter houses and search for smuggled goods. He opposed the Stamp Act on the grounds of expediency, but labored earnestly to enforce it. His house was sacked during this period and many valuable books were destroyed. He became governor in 1770, was extremely unpopular and when military law was proclaimed in 1774 went to England, where he lived until his death. Hutchinson's *History of Massachusetts Bay* in three volumes is one of the most valuable histories of colonial times.

HUXLEY, THOMAS HENRY, (1825-1895), a famous English naturalist, one of the influential defenders of the theory of evolution. He was born near London, the son of an assistant master of a boys' school. Huxley's early education was somewhat irregular, but he was an eager reader and in youth was profoundly stirred by the philosophy of Thomas Carlyle, from whom he learned to despise sham and hypocrisy. At the age of sixteen, Huxley was apprenticed to a physician, and in 1842 he entered Charing Cross Hospital, where for three years he received an excellent medical training. In 1846 he entered the royal navy as assistant surgeon, and sailed with H. M. S. *Rattlesnake* on a surveying expedition to Australasia, during which he sent a number of valuable papers to the Royal Societies. When he returned from his cruise he found his papers had made him famous.

In 1854 he became lecturer on natural history at the Royal School of Mines. About this time he made the acquaintance of the naturalist Hooker, and of Tyndall, and these three eventually became the scientific criterion of London, directing and influencing public opinion.

By the time Huxley was twenty-five he had established a reputation as a comparative anatomist and palæontologist. When Darwin's *Origin of Species* was published Huxley was active in defending it and in elucidating it. At various times he held professorships, offices in learned bodies and memberships in government commissions. He retired from active life in 1885 on account of ill health, but continued to write his brilliant essays.

Among his works are *The Oceanic Hydrozoa*, *On the Theory of the Vertebrate Skull*, *Man's Place in Nature*, *On Our Knowledge of the Causes of the Phenomena of Organic Nature*, a series of lectures to working men, delivered in 1862, *Elements of Comparative Anatomy*, *Elementary Physiology*, *Introduction to the Classification of Animals*, *Critiques and Addresses*, *American Addresses*, *Physiography* and *Anatomy of Invertebrate Animals*.

HYACINTH, *hi'a sinth*, a beautiful garden plant which grows from bulbs and belongs to an important genus of the lily family. All varieties of garden hyacinths are the offspring of the *Hyacinthus orientalis*, a species native to Western Asia. Introduced

into Western Europe in the sixteenth century, it became the base of numerous varieties cultivated widely, both in Europe and North America. Holland was and still remains the most important European country producing hyacinths, as its soil is admirably adapted to the growing of bulbous plants. The cultivated hyacinths bear both double and single flowers. These appear in a dense cluster on an erect stalk in the center of the long, narrow leaves. The blossoms show blue, white or purple shades, and make a rich garden decoration in early spring.

An old Greek myth accounts for the origin of the flower as follows: Apollo, the Greek god, had as a friend a beautiful youth named Hyacinthus, who was killed one day in a game of quoits. As a token of his love for the youth and sorrow at his death, Apollo caused a beautiful purple flower to spring from the drops of blood that fell from the brow of Hyacinthus.

HYBRID, *hi'brid*, in the animal and vegetable kingdoms, the offspring of two distinct species. From a commercial standpoint the crossing of plants has been of more practical value than the cross breeding of animals, though that useful creature, the mule, is a hybrid, being half horse and half ass. Through the crossing of plants varieties are obtained which show greater size and vigor, increased power of endurance and better quality and flavor. Examples of what can be done by cross breeding are seen in the work of Luther Burbank. See BURBANK, LUTHER.

HYDERABAD, *hi dur a bad'*, an Indian state sometimes also known as the Nizam's Dominions, is situated in the Deccan (centre of Indian Peninsula), and its ruler, the Nizam, is not only the premier Indian prince but one of the world's richest men. Hyderabad state covers an area of 84,700 square miles and has a population of 12,471,800



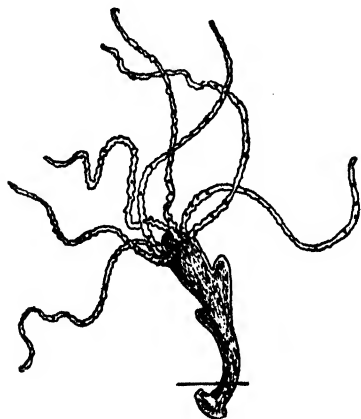
HYACINTH

people, 9/10ths of whom are Hindus though the ruling family and chiefs are Moslems. This is as striking a paradox as Kashmir whose ruling race are Hindus though the population is mostly Moslem.

HYDERABAD, capital of the state, has a population of 377,000 and boasts many fine buildings among which are the Royal palaces and the Jama Masjid (Moslem Mosque which can accommodate 10,000 people).

HYDRA, in Greek mythology, a monster which lived in the neighborhood of Lake Lerna, in the Peloponnesus. Some accounts give it a hundred heads, others fifty and others nine, but all agree that as soon as one head was cut off, two others immediately grew in its place. Hercules undertook to destroy this monster, and he succeeded, with the assistance of Iolaus, who, as each head was cut off, applied a burning iron to the wound. The central head, which was immortal, Hercules buried under a stone. See **HERCULES**.

HYDRA, FRESH-WATER, or **FRESH-WATER POLYP**, a small animal, found in pond water. It can be seen easily with the naked eye, as it is about the thickness of fine sewing-cotton and has a length of from one-quarter to one-half of an inch. Hydras are found adhering by one end to twigs or weeds in the water. On the other end are



FRESH WATER HYDRA

a number of very delicate threads or filaments, called *tentacles*. If the hydra is watched under a microscope, it will be noticed that its form is continually changing. Sometimes it extends itself so much that its length is sixteen times its diameter and the tentacles appear like long, delicate filaments.

At another time it contracts itself into an almost globular mass, and the tentacles appear like little blunt knobs. Besides these two movements, the hydra is able to go slowly from place to place. It is a voracious creature. When a water flea or any other living thing that may serve as food touches one of the tentacles, it becomes suddenly paralyzed by the barbed stinging cells which are literally shot out of the tentacle into the body of the animal, causing it to adhere to the tentacle. This tentacle and the others gradually contract until the prey is brought near the mouth of the hydra, which expands widely and draws the prey down into the digestive cavity. Hydras reproduce by building. That is, tiny wartlike growths appear on the body of the parent animal, which, as they grow larger develop tentacles. When grown they break off and become independent hydras. See **COELENTERATA**.

HYDRANGEA, *hi dran'je ah*, a genus of shrubs or herbs, belonging to the saxifrage family and containing about twenty-five species, natives of Asia and the Americas. The garden hydrangea is a native of China and was introduced into Great Britain by Banks in 1790. It is a favorite plant because of the beauty and size of its flowers, which are white, pink or blue in color.

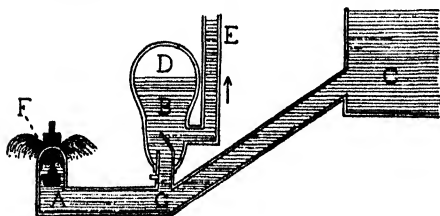
HYDRATES, *hi'drayts*, a term used in chemistry to designate a class of compounds containing a metal in combination with one or more groups of oxygen and hydrogen in even proportions. The oxygen and hydrogen form a combination which acts like an atom in many chemical changes, and the union is known as an *hydroxyl* (symbol OH). The term *hydroxide* is often used as a synonym of *hydrate*. The alkalis are typical hydrates, and are represented by caustic soda, or sodium hydroxide; caustic potash, or potassium hydroxide; and ammonia water, or ammonium hydroxide.

HYDRAULIC ENGINE, an engine operated by water under pressure. When the water is applied in such a way as to produce a direct rotary motion, the machine is usually termed a water wheel or water motor (see **WATER WHEELS**; **TURBINE WHEELS**). The term *engine* is more strictly applied to a water motor which operates on a plan similar to that of the steam engine, that is, being constructed with cylinders, pistons and valves (see **STREAM ENGINE**). The water is admitted and withdrawn alternately at oppo-

site ends of the cylinder and forces the piston from one end to the other. The piston rod is connected with a crank on the shaft, and its reciprocating motion is thus changed to a rotary motion when this is necessary. Hydraulic engines of this sort are occasionally used where a slow, steady motion and considerable power are required, as in operating hoisting cranes in foundries and working certain patterns of elevators, but the introduction of the electric motor has largely displaced them.

HYDRAULIC *hi draw'lik*, **PRESS**. See **HYDROSTATIC PRESS**.

HYDRAULIC *hi draw'lik* **RAM**, a machine for using the force of a stream of water to



raise a portion of the stream to a level higher than that of the ram. In the figure, C represents the reservoir and G the pipe through which the water flows. At A the pipe is turned upward and flows by a cone-shaped valve, usually made of iron. At G there is a pipe connecting with an air chamber, D. The entrance to this chamber is through the valve B. The working of this machine is as follows: When the water begins to run through the pipe G, the valve is in its lowest position and allows the water to flow out through the orifice F. This flow continues until the force of the stream of water through the pipe is sufficient to raise the valve and close the orifice. When this is closed, the flow water in G suddenly stops and the force of the current is such as to drive a portion of the water through the valve B into the chamber. As soon as the flow in G stops, the valve at F again falls to its first position and the flow is again started. The water is forced into the delivery pipe E, and a constant flow is maintained by the elastic force of the air in D.

Hydraulic rams are used where the source of water is below the level of the place in which the water is required for use. Only a small portion of the water which flows through G passes through the valve at B; therefore these machines are not practicable,

except where the quantity of water at the source is much greater than that needed for use.

HYDRAULICS, *hi draw'liks*, the science which treats of the laws of flowing liquids. Two general principles are always considered in applying these laws. They are:

(1) The velocity of a jet of water is equal to that of a body falling from the surface of the water. If a jet flows from a dam ten feet below the surface of the water, it will have the same velocity as a stone which has fallen ten feet.

(2) A jet of water will rise to the level of its source. If a cistern is on a support twenty-five feet high and a pipe is attached leading to the ground and having an opening bent upward, the jet issuing from the pipe theoretically will rise as high as the surface of the water in the cistern. Because of friction and the resistance of the air, however, this result will not be quite obtained. The practical application of the laws of hydraulics has given rise to the science of hydraulic engineering. See Hydraulic Ram; Hydrostatics; Water Wheels.

HYDROAEROPLANE, *hi'dro aer'o playn*. See **FLYING MACHINE**.

HYDROCARBONS, a large and important group of chemical compounds, consisting of carbon and hydrogen. Hydrocarbons are the simplest of the carbon compounds and are commercially of importance. Many occur in nature; petroleum, paraffin and natural gas are entirely composed of them, while they form the principal ingredient of caoutchouc, gutta percha, turpentine and certain essential oils. Artificially they are produced by the dry distillation of many organic substances; for example, gaseous hydrocarbons produced from coal; also the solid hydrocarbons produced by fractional distillation from coal tar. In cookery the hydrocarbons include the fatty foods, as distinguished from the carbohydrates, or sugars and starches. See **FOOD**.

HYDROCHLORIC, *hi dro klohr'ik*, **ACID**, or **MURIATIC ACID**, a compound of equal quantities of hydrogen and chlorine. It is the strongest acid known. In nature it is found in the water of rivers which take their rise in volcanic areas, notably those which rise in the Andes; it is set free in volcanic eruptions; it constitutes part of the gastric juices of man and some of the lower animals. It may be artificially produced by heating together common salt and sulphuric acid (as is done in the manufacture of soda) or by mixing hydrogen and chlorine.

Hydrochloric acid is colorless, and has a pungent odor and an acid taste. It has many uses, both in the gaseous state and in liquid solution (the commercial product is in liquid form). It is used in preparing the chlorides of various metals, in dyeing, in tissue printing and in the manufacture of coal-tar colors. It is also used in the preparation of phosphates from bones. In medicine it is used as a tonic and an astringent. In concentrated form it is a powerful caustic.

HYDROCYANIC, *hi dro si antik*, **ACID**, See PRUSSIC ACID.

HYDROFLUORIC, *hi dro floo oh' ik*, **ACID**, an acid compound of hydrogen and fluorine. It may be produced either in liquid form or in the form of a colorless gas. In both forms it is very poisonous. Liquid hydrofluoric acid acts powerfully on glass and is used extensively in etching. It is obtained by distilling a mixture of fluorspar with sulphuric acid. In chemistry, it is used to decompose and dissolve silicates in mineral analysis.

HYDROGEN, *hi' dro jen*, the lightest of all known substances, is a colorless, odorless and tasteless gas. It is present in gases escaping from volcanos, petroleum wells and natural gas openings. It exists in large quantities in the sun, and in some of the stars. One can easily prepare hydrogen for experimental purposes, by placing scraps of zinc in a flask or wide-mouthed bottle and covering them with water containing a small quantity of sulphuric acid. In the chemical change that follows the hydrogen is set free and can be collected in jars inverted over water. It may also be prepared by passing an electric current through water, which separates the oxygen and hydrogen. See ELECTROLYSIS.

Hydrogen is only one-sixteenth as heavy as oxygen. It burns with a pale flame, but with intense heat. A hydrogen flame no larger than that of an ordinary match will melt glass or a small iron wire. When combined with air and ignited, hydrogen explodes with violence; therefore all lights should be kept from it. Combined with oxygen and ignited in a blowpipe it forms the oxyhydrogen flame, used where intense heat is required in soldering and smelting.

Compounds. Hydrogen forms many compounds. With oxygen it forms water, whose symbol is H^2O . Water when decomposed yields one-ninth of its weight of hydrogen. The gas is found in nearly all animal and veg-

etable matter, and combined with carbon it forms a large class of substances known as *hydrocarbons*, of which illuminating gas, kerosene and naphtha are good examples. It is also an important ingredient of starch, sugar, wood, and many artificial products in common uses. With nitrogen it forms ammonia, and with sulphur the ill-smelling gas which is given off by many sulphur springs.

Because of its lightness hydrogen has been used to some extent for filling balloons, but its inflammability and the readiness with which it escapes through the smallest pores render it undesirable for this purpose, and helium (which see) is being substituted for it. It is used in converting liquid fats into solid fats and may be prepared in large quantities by passing steam over red-hot iron.

HYDROGEN DIOXIDE, or **OXYGENATED WATER**, or **PEROXIDE OF HYDROGEN**, a compound of hydrogen and oxygen which contains twice as much oxygen proportionately as water. It is found in small quantities in the juices of some plants and in rain water and snow. When the water which accompanies the artificial hydrogen dioxide has been evaporated, there is left an oily liquid which is colorless and odorless, but which has a bitter taste and will blister the skin if brought in contact with it. Hydrogen peroxide is a particularly valuable bleaching agent, and as a medicine it has proved an excellent antiseptic. Compounds advertised to bleach the hair are usually based on dilute solutions of this substance.

HYDROGEN SULPHIDE, *sul'fide*. See SULPHURETED HYDROGEN.

HYDROGRAPHY, *hi drog'ra fy*, that branch of geography which has for its object the description of the water on the surface of the globe, whether in seas, lakes or rivers. It may deal with the rivers, watersheds and lakes of a particular country; and it may also include the determination of winds, currents and other departments of marine surveying. Great Britain, France, the United States and other leading countries maintain hydrographic departments, under whose direction soundings, coast surveys and other maritime affairs are conducted.

HYDROMETER, an instrument for measuring the specific gravity of liquids. The hydrometer in common use consists of a small glass tube, enlarged at the lower end so as to form two bulbs, one above the other. A weight, usually consisting of mercury or

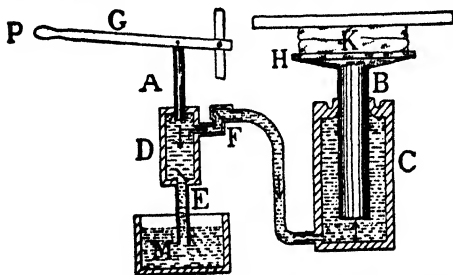
shot, is placed in the lower bulb to keep the instrument in an upright position. The upper part of the tube, which forms the stem, is marked with a graduated scale, zero being the point to which the hydrometer sinks when immersed in water. If immersed in a liquid heavier than water, it will not sink to the zero point, while, if immersed in a lighter liquid, it will sink beyond this point. Special hydrometers for testing the purity of milk are known as *lactometers*.

HYDROPHOBIA, *hi dro fo'be ah*, a disease resulting from the bite of a rabid animal, especially a mad dog. Inability to swallow is the first symptom of the disease, which, if unchecked, causes convulsions and death. A person bitten should have immediate treatment; delay is fatal. As a precaution the wound should immediately be sucked; this can be done with safety if the mouth contains no sore or infected spot. Then the victim should be taken promptly to a physician or other person competent to cauterize the wound, either with a hot iron or a powerful acid. If possible, the Pasteur treatment should be administered. This is a method of preventing the development of the disease by a system of inoculations with specially-prepared virus. Consult physician.

HYDROPHYTE, *hy'dro fyte*, a plant whose natural habitat is very wet soil or water. See **AQUATIC PLANTS**.

HYDROPLANE. See **FLYING MACHINE**.

HYDROSTATIC, *hi dro stat'ik*, **PRESS**, or **HYDRAULIC PRESS**, a machine which operates by the pressure of water and depends upon the principle that liquids transmit pressure equally in all directions. The working of the hydrostatic press is illustrated



in the accompanying diagram. The machine consists of two pistons, A and B, fitted with water-tight collars to their respective cylinders, C and D. The piston and cylinder A and D, together with the valves E and F, constitute a force pump which is connected by a

pipe with the cistern M. The piston B is fitted with a platform H, which, when the press acts, is forced upward towards the plate. The object to be pressed, K, is placed upon the platform. The piston A is worked by the handle G, which is so attached as to constitute a lever. The power is applied at P. By working the piston A, water is pumped from M into the cylinder D and thence into the cylinder C, raising the piston B. If the cylinder A has an area of one square inch and the cylinder B has an area of a hundred square inches, every pound of pressure applied at A will produce one hundred pounds of pressure upon B. By the lever attachment of the handle G, a pressure of one pound at P will produce a pressure of five hundred pounds upon B.

The hydrostatic press is used in pressing cotton, raising heavy weights and for other purposes where great force is required. See **HYDROSTATICS**.

HYDROSTATICS, *hi dro stat'iks*, the science which treats of liquids at rest. Some authorities also include hydraulics under hydrostatics. The laws of hydrostatics are those governing the pressure of liquids, of which water is taken as the type. The most important of these laws are:

(1) Liquids carry pressure equally in all directions. Given, a bottle whose neck will just fit a cork having an area of one square inch. Fill the bottle with water and press down on the cork with a force of one pound; the pressure on the bottle will be equal to as many pounds as there are square inches in its surface. If it has an area of one hundred square inches, the pressure will be one hundred pounds.

(2) The pressure increases with the depth of the liquid. At the surface the pressure is nothing. At the bottom the pressure for any area is equal to the weight of a column of water of the same area extending to the surface. This principle must be taken into consideration in the construction of pipes which are to stand in a vertical position; also, in securing the flow of water for the purpose of turning water wheels, as turbines.

[When these two laws are combined, they explain some very curious facts concerning water. It is in accordance with these principles that the water in a small tube will sustain the pressure of that in a large tube, when both are connected with the same vessel. The water in the spout of the teakettle remains at the same height that it is in the kettle. It is also in accordance with these laws that we account for the great pressure exerted upon tanks, cisterns or boxes that are connected with standpipes which extend to a great height. If an ordinary cask be filled and a

upright iron pipe one inch in diameter and thirty feet long be connected with it and also filled with water, the pressure upon the cask is sufficient to burst it.]

(3) When a body is immersed in a liquid, the pressure upon it is equal to the weight of the liquid displaced. For instance, a cubic foot of water weighs 62½ pounds. If a box having a capacity of a cubic foot and weighing 2½ pounds be immersed in water, it can contain 60 pounds of sand before it will sink.

HYDROSULPHURIC, *hi dro sul fu'rik*, **ACID**. See SULPHURETED HYDROGEN.

HYDROTHERAPY, *hi dro ther'a pi*, a method of treating disease by the use of water. Few physicians now think that proper water treatment can be a cure for everything, yet most physicians use it in a great variety of cases. By applying pure hot or cold water it is possible to cleanse exposed tissues, to drive away excess of blood from one part of the body, or to call blood to the place where it is needed. Water affects all secretions of the body in a cleansing and stimulating way. Sprains, sore throat, tonsillitis and other diseases are relieved by compresses of cold or hot water, and fevers are reduced by bathing or by water packs. In America and Europe there are numerous institutions where hydropathic treatment can be administered in its most approved form, and these institutions are frequented by patients suffering from the diseases that yield most readily to water treatment. See BATHS AND BATHING.

HYENA, *hi e'nah*, a wolflike animal that prowls at night in search of food, at intervals giving vent to horrible shrieking howls. The forelegs are longer than the hind legs, and the animal necessarily moves with a

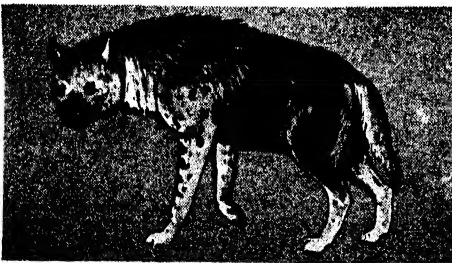
the *striped hyena* of Western Asia, the *spotted hyena*, yellowish in color with numerous dark spots, and the *brown hyena*, both African species. All are nocturnal (night-roaming) animals and are extremely voracious; they feed chiefly on carrion, and are thus of great value in the countries where they live. The aard-wolf of South Africa is included in this family.

HYGEIA, *hi je'yah*, the Greek goddess of health, daughter of Aesculapius, with whom she was often worshiped. She was represented as a blooming maid, with a bowl in her hand, from which she fed a snake, the symbol of healing power (see BRAZEN SERPENT). The modern word hygiene is traceable to her.

HYGIENE, *hi'ji en*, or *hi'jeen*, that branch of medical science which deals with the preservation of health. It differs from ordinary medical and surgical practice in that the latter has to do with the healing of those who are already sick. The science of hygiene has to do with keeping well those who are not sick. Each individual is morally bound to observe not only the laws of hygiene which public health boards impose, but others that concern himself personally. Standards of health are maintained by careful selection of foods, abstinence from alcoholic liquors, moderation in the use of tea and coffee, personal cleanliness, and observance of the laws of ventilation. By exercising care in regard to food, cleanliness and fresh air, by avoiding dissipation and overwork, and by keeping the mind free from worry, the average person can maintain a good state of health.

Domestic hygiene is also of great importance. Those who have charge of a home must look after the character, quality and quantity of food and its adaptation to the different members of the family, according to age, state of health and occupation; the clothing of beds and persons must be carefully and regularly cleaned and aired; and the minds of the young must be directed in the lines that will fit them for the duties of adult life.

In the field of public hygiene remarkable progress has been made since the beginning of the eighteenth century. Enforcement of regulations in regard to building construction, plumbing, house ventilation, street cleaning and water supply, and extermination of such pests as rats, flies and mosquitoes have accomplished much in preventing the spread of



HYENA

swinging, shambling gait. The eyes are large and prominent; the ears, long and acute; the jaws, powerful. Not only is the animal ugly in appearance, but its odor is sickening. There are three species known—

disease. The public is being enlightened as to the cause of infections and as to methods of prevention, and the result is a higher standard of public health and a decrease in the number of deaths from disease.

Related Articles. Consult the following titles for additional information:

Antitoxin	Health, Boards of
Bacteria and	Heating, and
Bacteriology	Ventilation
Baths and Bathing	Housing Problem
Breathing	Medicine
Fly	Mosquito
Food	Quarantine
Garbage	Sanitary Science
Germ Theory of	Sewage and
Disease	Sewerage

HYGROMETER, an instrument for measuring the amount of moisture in the atmosphere or in other words, the *humidity* of the atmosphere. The standard hygrometer consists of a glass tube with a bulb at each end, one of colored glass, or of glass painted black, and the other of plain glass. The colored bulb contains ether and a thermometer; the other is covered with a cap of muslin or with a wick, one end of which dips into a vessel of water. When the instrument is manufactured, the ether is placed in the larger bulb and raised to the boiling point so as to expel the air from the tube, which is then sealed, leaving a vacuum as the ether cools.

The principle upon which this instrument works is that of condensation of moisture in the atmosphere by the lowering of temperature. The water drawn up by the wick which covers one bulb evaporates and reduces the temperature, and this causes the continuous evaporation of ether in the other bulb and so reduces the temperature of this bulb that moisture from the atmosphere gathers upon the glass, as it does upon a pitcher of ice water. The thermometer in the ether bulb shows the temperature at which this condensation begins to form, while a thermometer on the stand shows the temperature of the atmosphere. By combining the readings of the two thermometers, and by means of tables which have been carefully worked out, the relative amount of moisture can be ascertained.

HYKSOS, *hik'soze*, the name given to a dynasty of kings which usurped the power in Egypt about 1700 B. C. See EGYPT, subhead *History*.

HYMEN, *hi'men*, originally a marriage song among the Greeks, but later the god of marriage. He was the son of Apollo and a Muse. In art he was represented as a beauti-

ful youth, crowned with flowers, shod with gold sandals and carrying a torch. His blessing was invoked at every marriage.

HYMENOPTERA. See INSECTS.

HYMNS, NATIONAL. Every nation has at least one song which expresses in a definite way the national sentiment of the people. Such a song is played or sung at patriotic meetings and on special occasions, and when its music is heard the people stand or bare their heads. In England special tribute is paid to *God Save the King*; in Canada, to *The Maple Leaf*; in France, to *The Marseillaise*; in the United States, to *The Star Spangled Banner*. National hymns are the outgrowth of folk music, but differ from the latter in that they express the sentiments of the whole people, instead of the feelings of the individual.

The following list gives the accepted national hymns of various nations:

Austria (before 1919), *Gott erhalte unsern Kaiser* (God preserve our Emperor). Music by Haydn; words by Haschka.

Brazil, Hymn of the Proclamation of the Republic. Words by Albuquerque; music by Miguez.

France, *La Marseillaise*, by de Lisle.

Germany, *Die Wacht am Rhein*, by Schneckenburger.

Great Britain, *God Save the King*, probably by Carey.

Greece, *Sons of Greece, Come, Arise*.

Holland, *William of Nassau*.

Italy, *Air—Royal March*, by Gabetti.

Japan (translated), *May the Empire Last*.

Mexico, *Mexicans at the Cry of War*, by Nuno.

Norway, *Song for Norway*, by Björnson.

Spain, *Himn de Riego*. Music by Herta.

Sweden, *Out of the Swedish Heart*.

United States, *Star Spangled Banner*.

The following are popular hymns widely used upon patriotic occasions in the countries named:

United States, *Yankee Doodle*, *Dixie*, *America or My Country 'Tis of Thee*, *Battle Hymn of the Republic* and *Columbia the Gem of the Ocean*.

Germany, *Heil dir im Siegerkranz* (Prussia); *Deutschland über alles*.

Canada, *The Maple Leaf*.

Related Articles. Consult the following titles for additional information:

America	Marseillaise Hymn
Battle Hymn of the	Star Spangled Banner
Republic	Wacht am Rhein
Dixie	Yankee Doodle
God Save the King	

HYMNS AND HYMN TUNES. A hymn is a religious poem set to music. From the earliest times hymns were used in worship, and the Hebrew *Psalms* constitute a collec-

tion of hymns which has never been equaled. In the Christian Church there are records that hymns were used as early as the second century A. D., but the first which has come down to us dates from the beginning of the third century. A number of the world's most famous hymns are of Latin origin, such as *Come, Holy Spirit*; *Dies Irae* ("Day of Wrath"); and *Stabat Mater* ("The Mother Stood").

The Reformation inspired many noble songs, and gave a strong impetus to hymn writing. Luther was the greatest song writer of the period, and his *Ein' feste Burg ist unser Gott* ("A Mighty Fortress is Our God") is to-day a favorite Protestant hymn. Although many hymns were produced in England before the time of Isaac Watts (1674-1748), the name of the "father of English hymnody" is often given to Watts. His hymns are very numerous, and many of them are still exceedingly popular. The only possible rival to Watts in the number of his compositions was Charles Wesley (1707-1788), who wrote over six thousand hymns, almost four hundred of which are commonly used. Among the later hymn writers in England may be mentioned Cowper, John Henry Newman and Frances Ridley Havergal.

American writers who contributed to hymnology include Oliver Wendell Holmes, Phoebe Cary, P. P. Bliss, Julia Ward Howe, who wrote the *Battle Hymn of the Republic*; Samuel Francis Smith, author of *America*; Timothy Dwight; Ray Palmer, who wrote *My Faith Looks Up to Thee*, and Frances Jane Crosby, the author of a great number of gospel hymns, of which perhaps the most famous are *Safe in the Arms of Jesus*; *Pass Me Not, O Gentle Savior*, and *Jesus is Calling*. Several hymns which are among the most noteworthy in common use in the churches are *Lead, Kindly Light*, by John Henry Newman; *Nearer, My God, to Thee*, by Mrs. Sarah Flower Adams; *Just as I am, Without One Plea*, by Charlotte Elliot; *One Sweetly Solemn Thought*, by Phoebe Cary; and *I Love to Steal a While Away*, by Mrs. Phoebe H. Brown.

Previous to the Reformation, the music in use for hymns had been of the nature of chants, or had been heavy and somewhat somber. Luther, however, who had much to do with popularizing the words of hymns in common use, did much for the music, also,

by adapting certain popular airs and writing sacred words for them. In England the history of hymn tunes begins properly with the eighteenth century. With the music written for the hymns of Charles Wesley, hymn tunes reached, perhaps, their highest point. Modern hymn tunes, especially those used in Sunday Schools, have been criticized for their triviality.

Interesting Facts About Hymns. It has been estimated that there are at least 400,000 hymns in all languages. The greatest number of these are in German, the next greatest number in English.

The Mohammedans have no hymns.

The most ancient Christian hymn of any length which we possess to-day is the well-known *Te Deum*—"We praise Thee O God." It has come to us through the Latin from a very early Greek original.

Martin Luther's great hymn, *Ein feste Burg* was a great force in the spread of the Reformation. The tune to which this hymn is always sung was also composed by Luther.

Four hymns, *When I Survey the Wondrous Cross*, *Rock of Ages*, *Jesus, Lover of My Soul*, and *Coronation* are printed in more collections, translated into more tongues, and used in more congregations than any others. Some authorities, among whom is no less a critic than Matthew Arnold, consider *When I Survey the Wondrous Cross* the finest hymn in the English language; others place it second to *Rock of Ages*. This latter hymn has been translated into almost as many languages as the Bible itself, probably over three hundred. Gladstone translated it into Latin, Greek and Italian.

One of the best known hymns is *Blest Be the Tie That Binds*, by John Fawcett. Fawcett was an English Baptist pastor, who served for years a little congregation at Wainsgate, receiving from them a very small salary. Finally he decided to accept a call from an important church in London, but after his goods were packed he decided that he could not leave his people. It was on that occasion that he wrote this hymn.

One Sweetly Solemn Thought, by Phoebe Cary, was composed in a little chamber of a village cottage one Sunday morning, after church. It has been translated into nearly all languages of the civilized world.

Charles Wesley's most famous hymn, *Jesus, Lover of My Soul*, was written immediately after a narrow escape from death by ship-

wreck. Henry Ward Beecher said of it: "I would rather have written that hymn of Wesley's than to have the fame of all the kings that ever sat on earth."

Henry Francis Lyte wrote *Abide with Me* at the close of the service at which, "scarce able to crawl," he had taken part in his last communion with the congregation which he had served for twenty-five years, thus giving it a strongly-sentimental background.

HYPATIA, *hi pa'she ah*, (about 355-415), a famous Greek philosopher, of the Eclectic school, the daughter of Theon, a celebrated astronomer and mathematician of Alexandria. Her father taught her not only all the branches of polite learning, but also geometry, astronomy and, finally, philosophy. She acquired a great reputation in the last study and succeeded her father as lecturer at Alexandria, where she gathered a large number of students from all parts of the East. She was as virtuous and beautiful as she was learned. But the jealousy and intolerance of Cyril, the bishop of Alexandria, were aroused at the influence exercised by Hypatia; the lower and more ignorant clergy in particular were stirred against her, and at length a number of them, having excited a popular tumult, seized her as she was returning from the schools, dragged her through the streets of Alexandria, stripped her and finally murdered her with circumstances of the greatest barbarity. She is the heroine of Charles Kingsley's *Hypatia*, or *New Foes with an Old Face*.

HYPERION, in the earliest Greek legend, one of the twelve children of Uranus and Gaea who constituted the race of Titans. Uranus, afraid of his gigantic offspring, shut them up, but they escaped. Uranus became the sun-god, driving across the sky each day in a golden chariot. In later mythology Hyperion was identified with the sun-god Apollo. See **APOLLO**.

HYPERMETROPIA, a defect of the eye, caused by a shortening of the diameter extending from front to back, often referred to as flattening of the eyeball. Rays of light entering an eye thus affected are brought to a focus back of the retina, and the person is said to be *farsighted*. The defect usually increases with age. It is remedied by spectacles having convex lenses. The gradual shortening of this diameter as people grow older necessitates the use of such spectacles in nearly all cases. See **EYE**; **SPECTACLES**.

HYPNOTISM, *hip'no tiz'm*, a condition which may be artificially induced, in which the mind and body of one individual may be peculiarly influenced by another, apparently independently of the subject's will. Modern scientific investigation, while not fully explaining hypnotic phenomena, has shown that they are due to peculiar nervous conditions and that it is unnecessary to presuppose any supernatural force to account for them. Among the means employed to produce the hypnotic condition are touching and stroking with the hands, breathing on the person and fixing the eyes upon him. It may also, it is said, be produced by causing the patient to stare at an object, especially a bright one, placed in such a position as to strain the eye, the effect being completed by a few passes of the hand over the face without touching it.

In the condition thus induced, the patient seems to be in a kind of sleep and the limbs will remain in any position in which they may be placed. By stroking the surface of the body the muscles adjacent may be rendered rigid, as in a person suffering from catalepsy. Reason and memory are temporarily suspended, the will is paralyzed, and the subject is irresistibly impelled to act in accordance with suggestions, however absurd. He can be persuaded into any belief, such as that he is some one other than himself, or that he hears or sees, smells or tastes, something which is not present before him. As a curative agent, hypnotism has been successfully employed in certain forms of disease, especially in cases of nervous irritation and sleeplessness, disorders that have a nervous origin.

The first step toward scientific investigation of hypnotic phenomena was taken by James Braid, an English surgeon, in 1842, but general interest in the subject was originally awakened by the experiments of Dr. Mesmer (see **MESMERISM**). To Braid we owe the term *hypnotism*. Dr. Heidenhain of Breslau attributes the phenomena to what is known by physiologists as the inhibitory action of the nerves. Such action, he holds, has the result of suspending the action of that portion of the brain which is devoted to voluntary movements, thus putting the patient in a condition in which involuntary movements may be induced by impressions made upon the senses. Hypnosis comes, then, not through the power of some person without, but through the action of the subject's own

mind. One idea alone is held in mind, and as all the others have been discarded, the subject has nothing with which to compare it and it becomes the ruling power. Not everything concerning hypnotism is understood, but it is certain that no one can be at first forced unwillingly into the hypnotic state, and that only those having considerable mental power can pass into the condition.

HYPODERMIC, *hi po der'mik*, **INJECTION**, a method of introducing medicine beneath the skin and so directly into the blood. The instrument in use is a small glass syringe, fitted with a long, hollow, needle-shaped point of steel. Hypodermic injections are given when the condition of the stomach or other organs renders the use of drugs by the mouth objectionable, when rapidity of action is desired, and in the administration of anesthetics.

HYPOTHESIS, a supposition assumed for the sake of argument. In scientific and philosophical usage it denotes either a probable theory of phenomena not yet fully explained, or a strictly scientific theory which accounts for all the known facts of the case, and which only needs the verification of subsequent observations and deductions to become a certainty. Thus, the conjecture of Newton that the force of gravity, as shown on the earth, might extend to the moon, was an hypothesis; but when it was found to ac-

count for all the facts of gravitation it became a scientific theory.

HYSSOP, *his'sup*, a plant of the mint family, the common species being a perennial, shrubby plant, rising to the height of two feet. It is a native of Siberia and the mountainous parts of Austria, but it is common in the gardens of the United States. It flowers from June to September, having tiny blue blossoms which cluster on spikes. The leaves have an agreeable aromatic odor, and are slightly bitter. Hyssop was once valued for its reputed medicinal qualities. The hyssop of Scripture, the symbol of spiritual purification from sin, is believed by most authorities to be the caper.

HYS'TERIA, a nervous disease, more common among women than men, but affecting both sexes. It manifests itself in emotional outbreaks, such as violent sobbing, screaming and uncontrollable laughter. It is often spoken of slightly, and formerly it was thought to be entirely under the control of the patient, but it is now known to be frequently a disease of a very serious nature. Overwork, worry, shock or vicious habits may be the causes, and any form of great excitement may bring on an attack. The removal of the causes which produce the disease, nourishing food, exercise or massage and complete abstinence from worry and anxiety will usually effect a cure.



I, the ninth letter and third vowel of the English alphabet. In its form it has changed considerably from the Phoenician character from which it is derived, and which resembled a Z. The straightening out was gradual. The two principal sounds represented by it in English are the short sound, as in *pin*, and the long, as in *pine*, the latter being really a diphthong, composed of *ah* and *ee*. The other sounds of *i* are that heard in *first* and that heard in *machine*. *I* and *j* were formerly regarded as one character (see the article J). In the Greek alphabet, which was derived from the Phoenician, the letter *i* is spelled *iota*; because it is the smallest character of the Greek alphabet, the name has come to have the meaning of the phrase: "a minute part of anything." The corresponding Hebrew letter, *yod* (*jot* in English), has an equivalent meaning, as indicated in the following sentence from the Bible: "Till heaven and earth pass, one jot or one tittle shall in no wise pass from the law till all be fulfilled" (*Matt. 5:18*).

IBANEZ, VICENTE BLASCO (1867-1928), the most prominent and successful Spanish novelist since Cervantes. He was born in Valencia. His life in Argentina from 1908 to 1913 supplied background for his great novel *The Four Horsemen of the Apocalypse*. Many other novels have appeared in English translations,—*Enemies of Women*, *Blood and Sand*, *The Shadow of the Cathedral*, *The Temptress*.

IBERIA, the name given by the ancient Greeks to the peninsula comprising Spain and Portugal. The Iberians are probably the most ancient European nation. They form the basis of the population of Italy, Gaul, Spain and Portugal. The Basques are their descendants and still preserve the ancient Iberian language. The Romans knew Iberia as *Hispania*.

IBERVILLE, *o bair veef*, **PIERRE LE MOYNE**, Sieur d' (1661-1706), a French-Canadian soldier and explorer, born in Montreal. He entered the French navy, and in 1699 he sailed from France to the Gulf of Mexico, entered the mouth of the Mississippi and established Biloxi, and later Mobile, being thus the founder of the French province of Louisiana.

IBEX, the name of two or three species of wild goats. The horns are flattened and long, in some species attaining a length of forty inches. A species once common in the mountains of Central Europe, but now very rare, is called *steenbock* by the Germans and *bouquetin* by the French. The *Himalayan ibex* is somewhat larger than the other species, and has huge horns. The animals live in groups,



SACRED IBIS

and have maintained their numbers in nearly all their native districts. Hunting the Himalayan ibex is a favorite sport, but is ex-

trely dangerous because of the wildness and ruggedness of the country in which it roves. Notwithstanding the zeal with which the animal is hunted it maintains its numbers well, for it is very prolific. There is an *Arabian ibex*, which roams from Palestine to Upper Egypt.

IBIS, a wading bird, related to the storks, with a long, slender bill curved downward. Two or three species are found in the United States. The *white ibis*, with black tips to its wing feathers, is common in the South Atlantic and Gulf states. The *scarlet ibis*, found in the West Indies, and occasionally in the Southern States, has red plumage throughout, excepting the tips of the wing feathers, which are black. The *sacred ibis* of Egypt is a larger, heavier and less graceful bird. Because it migrated north with the rise in the Nile and was an enemy of lizards and small reptiles, it came to be held in great reverence by the Egyptians, who, after its death, preserved it as a mummy. The sacred ibis is now extremely rare.

IBSEN, HENRIK (1828-1906), a Norwegian dramatist and lyric poet, one of the foremost literary men of his age. His first play, *Catiline*, was published in 1850, and in the same year *The Warrior's Mound* was successfully produced in Christiania. He was successively director of the theater at Bergen and the Norske Theater at Christiania, which he managed from 1857 to 1862. In 1864 he left his native country, lived for several years in Rome and afterwards in Dresden, but went back to Norway in 1878. His dramas are partly in prose, partly in verse, and they include historical plays and satirical comedies of modern life. Among his chief works are *Brand* and *Peer Gynt*, dramatic poems, *The League of Youth*, *A Doll's House*, *Ghosts*, *Rosmersholm*, *The Lady from the Sea*, *Hedda Gabler*, *Master Builder Solness*, *John Gabriel Borkman* and *When We Dead Awaken*. The vital character of Ibsen's themes, the fearless presentation of them and his wonderful mastery of dialogue give him a place among the greatest modern dramatists.



IBSEN



ICE, *ice*, water frozen into a solid mass. Water freezes when its temperature is reduced below a certain point. Under ordinary conditions pure water solidifies at a temperature of zero on the Centigrade scale, and at 32° above zero on the Fahrenheit (see **THERMOMETER**). The presence of certain substances in water, however, has the effect of lowering the freezing point; water containing salt in solution, for instance, freezes at about 27° F. The application of strong pressure to the surface of water has a similar effect.

As water approaches the freezing point in temperature, it contracts, until at about 39° F. it reaches its greatest density. As the temperature lowers it begins to expand, and when it freezes it expands so as to increase its volume about one-ninth. This makes ice lighter than water, so that it floats. The force of the expansion is very great. This is why pipes, pitchers and other vessels in which water freezes are broken. The breaking of rocks from cliffs is often due to the freezing of water in crevices of rock. A cake of pure ice appears transparent, but when a thin slab of ice is held in water for a few moments to make the sides smooth and is then looked at towards a light, numerous brilliant six-pointed stars are seen. These are some of the six-sided crystals of which the ice is composed.

Harvesting Ice. The extensive use of ice for preserving perishable substances makes the harvesting, storing and shipping of it an important industry. Natural ice for use is obtained from the lakes and rivers of cold regions. The first step in harvesting ice consists in scraping off the snow and porous ice from the surface. After this, the field is marked off by a machine called the *marker*, which cuts parallel grooves in the ice about three feet apart; afterwards other grooves at right angles to the first and about the same distance apart are cut.

This marks off the field into cakes. The third step is cutting, which is done by means of a machine which follows the marker and is

of similar construction, except that it has longer knives. After this machine has completed its work, the first cake is cut out by a handsaw. When this has been removed, the others can be split off with a crowbar having a wedge-shaped end. The ice is then hauled from the water to the ice houses, where it is stored until needed.

Ice houses in some localities are from two to three hundred feet long and five stories high. They usually have three or four walls, between which spaces of dead air are enclosed, and are provided with drains and ventilators. The ice is packed in sawdust or spent tan bark. The most extensive ice harvesting is on the Hudson River, in Maine and on the lakes and streams of Wisconsin, Michigan and Minnesota.

Manufacture of Ice. In large cities and in localities removed from regions where ice forms in winter, it is often cheaper to manufacture ice than to import it. When the ice is intended for domestic purposes it is made from distilled water. The plant for the purpose must contain an engine, pumps, condensers, tanks, pipes and some other machinery. The freezing is done by the expansion of liquid ammonia into ammonia gas, which takes place in coils of pipe that are surrounded by brine. Since the brine freezes at a much lower temperature than fresh water, by immersing the tanks containing the water to be frozen in brine, the ice is readily formed. The water to be frozen is placed in tanks called *cans*. These are shaped like cakes of natural ice. When these tanks are placed in position the pump forces the ammonia gas into a small chamber under such pressure that it becomes a liquid. This liquid in turn is allowed to escape slowly into the pipes, where it evaporates and absorbs heat from the brine, which is reduced to a temperature several degrees below the freezing point of water.

"Dry Ice" and "Carbice." These names are applied to a refrigerant, often confused with true ice, but in reality *solid carbon dioxide*. See CARBONIC ACID GAS.

ICEBERGS, *ise'burgz*, gigantic masses of ice which have become detached from the glacial shores of the Arctic and Antarctic regions, and which float about in the ocean at the mercy of the winds and currents, until eventually melted by the sun in regions remote from their origin. They are, in truth, pieces of glaciers, broken from the parent

mass by the action of the sea and by their own immense weight.

Icebergs present the strangest and most picturesque forms, are sometimes miles in length and rise to heights of perhaps 250 or 300 feet above the sea. A better idea of their vast size is gained when it is known that the great mass which appears above the ocean's surface is only about one-eighth of the entire iceberg—that seven-eighths is below the surface. These great masses consist of clear, compact, solid ice, with a bluish-green tint. Their cavities contain fresh water, from the melting of the ice. They are frequently encountered in the North Atlantic Ocean, and have caused many wrecks, the most notable one in recent years being the loss of the great *Titanic*, on its first trip in 1912 (see *TITANIC*).

The ice that forms on the surface of the sea, called *field ice*, is porous, incompact and imperfectly transparent. The field ice forms in winter and breaks up in summer. A small field is called a *floe*; one much broken up forms a *pack*. Floes and packs are encountered by navigators.

ICE BOATING. See ICE YACHTING.



Icelandic Costume

ICELAND, an island between the North Atlantic and the Arctic oceans which in 1918 joined the ranks of the world's independent nations. Iceland was not well-named; it is as correct to call it Iceland as to call its nearest neighbor consisting of several hundred thousand square miles of ice, Greenland. The island is not a bleak, barren, frozen region though its most northern point crosses the Arctic Circle. It has a somewhat temperate climate for a considerable portion of the year, and an atmosphere unrivaled in clearness. Capital, Reykjavik (which see).

The wonders of many widely-separated parts of the world are found within the confines of this little country. It has great glaciers, like those in Switzerland; the firds and the midnight sun of Norway; volcanoes and grottoes such as are found in Italy; geysers like those in New Zealand and in Yellowstone Park; mineral springs as valuable

as those in Germany; and one of the largest waterfalls in the world.

Iceland contains 39,709 square miles, and a population of 108,870 (1930). It is 150 miles east by south of Greenland, from which it is separated by the Strait of Denmark, and about 500 miles northwest of Scotland. It is no farther north than Fairbanks, Alaska, or Dawson, in the Yukon. The climate is more harsh than it is cold; the temperature in the winter averages about 30°, while in the short summer it does not average more than 50° on the southern coasts. The comparatively-cold summers are caused by drifting ice masses from the polar regions.

The people do not engage largely in agriculture, although farming is on the increase and there are four agricultural schools. They raise sheep, cattle and horses, and exchange them in Europe for the necessities of life. The fisheries are important. In 1917 the first vessel that ever sailed direct from Iceland to the United States carried home a cargo of flour. Only about two-fifths of the land is available for farming or stock-raising; the remainder is either glacier-covered or is too hilly and rough for cultivation. The hills rise 1,600 to 2,000 feet above the sea.

Icelanders are famous for a literature of note, dating to the sixteenth century. There are few schools, but every child is educated at home, and no one is unable to read. There are twelve printing presses and fourteen newspapers in the island; and about a hundred books are published every year.

In 1918 Iceland became practically free from Denmark, to which it had been attached as a colony almost since its discovery about the year 870. It was an entirely harmonious agreement between the two countries, by which they became united as free and equal federal states. The arrangement provides that the two shall remain independent until 1940, when at the will of the governments the federative constitution may be reframed or abrogated. During the period preceding 1940 the two countries will have the same king, and the name of each country is to appear in the title of the monarch.

ICELAND MOSS, a lichen of the Arctic regions, especially of Iceland and upper Norway. It is also found farther south, on the tops of high mountains. In Iceland and Lapland it is used as food, being dried, powdered and made into bread, or boiled with milk. It yields a thick glue, and much of it is

exported for use in the manufacture of paper-sizing and for dressing the warp in weaving.

ICELAND SPAR, a transparent mineral, which makes objects seen through it appear double. If a crystal of this spar is placed over a dot, two dots are visible. The phenomenon is due to double refraction of light. Iceland spar, which is a variety of calcite, crystallizes in the form of a rhombus. See **POLARIZATION OF LIGHT**.

ICE PLANT, a plant so named from the transparent cells which cover its whole surface and have the appearance of granules of ice. It is a native of South Africa and the Canary Islands, and is also found in Greece.

ICE YACHTING, *yaht'ing*, a sport limited in great degree to the United States and Canada, although it is occasionally enjoyed in Russia. It first made its appearance in North America late in the eighteenth century, and since that time has steadily increased in popularity, until ice yachts are now commonly seen on the lakes during the winter months.

The most common type of ice yacht consists of a triangular box mounted upon two cross-bars, the lengthwise bar being from one-third to one-half longer than the crossbar. On both ends of the crossbar are fastened steel skates, and at the rear of the longer bar is a skate which is under the control of a lever and serves as a rudder. The boat has one large sail and often a smaller jib sail. In racing, a triangular course of about one mile on a side is laid out, and the contestants are compelled to sail five times around this triangle in each boat. Under favorable weather conditions and on good ice, remarkable time can be made, since in certain directions the boat can move considerably faster than the wind that propels it. From forty to seventy miles an hour is not an unusual speed. The principal points at which ice yachting tournaments are held are on the Hudson River, at Poughkeepsie and Newburgh; Lake Minnetonka, near Minneapolis, Minn., Lake Winnebago, near Osh-



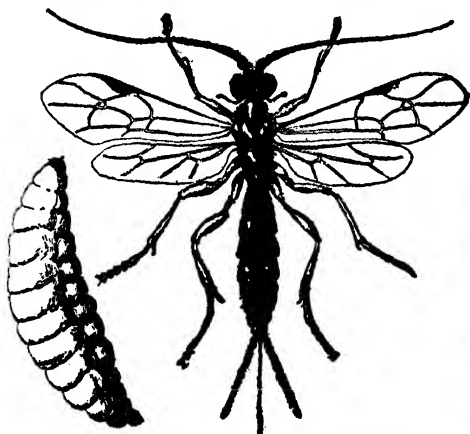
ICELAND MOSS

and Newburgh; Lake Minnetonka, near Minneapolis, Minn., Lake Winnebago, near Osh-

kosh, Wis.; at Burlington, Vt., on Lake Champlain; on the Saint Lawrence River, and on Lake Ontario.

ICHNEUMON, *ik nu'mon*, a genus of flesh-eating animals belonging to the civet family. They have a long, slender body, a sharp and pointed muzzle and short legs. The best known species inhabits Egypt, where it is called *Pharaoh's rat*. It was held sacred by the ancient Egyptians on account of its hostility to crocodiles, whose eggs it digs out of the sand and sucks. It is expert in seizing serpents by the neck so as to avoid any injury to itself. The ichneumon is domesticated in Egypt, and is more useful than a cat in destroying rats and mice. The *mongoose*, or *Indian ichneumon*, is another species, not so large as the Egyptian, which it resembles in habits. It is kept in many families as a useful domestic animal. It is especially famous for its ability to kill the deadly cobra.

ICHNEUMON FLIES, a large family of insects, all of which agree in one particular, that they deposit their eggs either in or on the bodies, eggs or larvae of other insects. These apparently insignificant creatures confer inestimable benefits on man, as they destroy hosts of insects injurious to crops. They are delicate, long-legged insects, varying much in size. Their eggs are deposited by means of a pointed organ called the *ovipositor*.



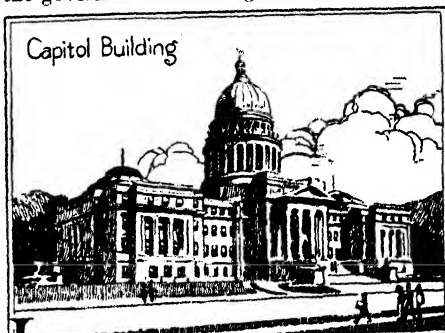
ICHNEUMON FLY AND LARVA
Much enlarged.

ICHTHYOSAURUS, *ik thi o saw'rus*, an immense fossil marine reptile. It had four broad feet, or paddles, each enclosed in a single sheath, or integument, and a long and powerful tail. Its body was round and tapering, the head large, with long snout and short

neck. The vertebrae of the animal very closely resembled in shape those of a fish. Some of the largest of these creatures must have exceeded thirty feet in length. Their remains show that they existed in large numbers in some parts of Europe. In all, about thirty-five species are known, skeletons of which have been found in the formations of the East Indies, Australia, New Zealand, South America and Europe. (A picture of the ichthyosaurus as it was supposed to appear accompanies the article GEOLOGY.)

ICONOCLASTS, *i kon'o klasts*, a word applied to those who destroyed the images in the early Christian churches. It is derived from the Greek *eikon*, meaning *image*, and *klan*, signifying *to break*. In the first centuries of the Christian Era images of Christ and the saints were placed in the churches only as constant reminders of pious examples, but in the sixth century these figures began to be worshiped. In 726 Leo III issued an edict forbidding the worship of images and the burning of incense in their honor, and ordering them to be destroyed. There was consternation, and the Church was divided into two factions, those favoring images and the Iconoclasts.

The second council of Nicaea defined the use of images not as idol-worship but as religious symbolism, in which case the image was venerated for what it represented. In the Greek Orthodox and Roman Catholic churches images are still retained and revered as symbols. In Russia sacred pictures called *eikons* were found in all the churches before the Communist revolution (1917); thereafter the government discouraged their use.



IDAHO, one of the states of the Rocky Mountains section, twelfth in size among the states of the American Union and in 1930 forty-second in population. The state is

called the *Gem of the Mountains*, for the word *Idaho* is derived from a Shoshoni Indian term having that meaning. The northern boundary touches British Columbia; the state has Montana and Wyoming for eastern neighbors; Utah and Nevada are on the south, and Washington and Oregon bound it on the west. The area is 83,888 square miles. The state's greatest length is 490 miles; greatest width, 305 miles. Population, 1930, 445,032, an average of 5.3 persons to each square mile.

Surface and Drainage. Idaho is a mountainous state. The continental divide, or "back bone of the continent," together with the Bitterroot and Coeur d'Alene Mountains form the longer portion of the eastern or Montana-Idaho boundary line. Short ranges, like the Caribou, an extension of the Rocky Mountains, are found near the Wyoming border. Several short, irregular ranges reach up into southeastern Idaho from Utah and Nevada. In central Idaho is the celebrated Sawtooth range, so named from its picturesque saw-shaped peaks. Hyndman Peak, of this range, towers to the height of 12,078 feet and is the state's highest point. In southern Idaho are the Snake River Plains, nearly 400 miles long and from 50 to 100 miles wide. This lava-covered belt follows the great "crescent" of the Snake River, and forms one of the nation's richest irrigated agricultural areas. The Snake River and leading tributaries, like the elbow-shaped Salmon and historic Clearwater, drains nearly all of southern and central Idaho. The Clark Fork and Kootenai, swiftly flowing tributaries of the Columbia River, drain North Idaho. A small area in the southeast corner of the state is drained by the Bear River into the Salt Lake Basin. With the exception of this small area, all Idaho belongs to the well-known "Columbia Plateau."

The state ranges between wide extremes of altitude. Lewiston, near the Oregon-Washington boundary is only about 700 feet above the sea while numerous mountain areas have altitude levels of from 6,000 to 12,000 feet. The average elevation of the state is 4,500 feet. Idaho, because of its unusual geological history, presents an almost bewildering complexity of natural features. Ice-cold and boiling hot springs mix their waters in the same mountain stream. Granite mountains, lava rivers, "palouse" prairies, forests, lakes, canyons, water-falls, craters

of extinct volcanoes, wide plains, and sheltered valleys present an impressive scenic spectacle.

Climate. The difference in altitude gives the state a diversity of climate, so far as temperature is concerned. In the valleys and on the plains the mean temperature is higher than on the uplands of the same regions. In the southern part during July and August the temperature may rise to 100°, or higher, but in the lowlands the winters are mild, and the temperature seldom falls below zero. Here but little snow falls. In the mountains the winters are more severe, and the snowfall is heavy, but the mountain valleys are sufficiently sheltered to allow stock to roam at large during the winter, and in many sections without feeding. In the southern part there is not sufficient rainfall for the production of crops without irrigation or for the practice of what is known as dry farming. In the northern part, however, there is an abundance of rainfall, caused by the contact of the western winds with the mountain regions. For the latitude, the climate here is mild. Throughout the state the climate is temperate, and remarkably healthful.

Mineral Resources. The mineral resources of Idaho are varied and extensive, and mining is one of the leading industries. In 1860 gold was discovered on Orofino Creek, in what is now the north central part of the state. It has been mined continually since, but in recent years the output has diminished. Silver has greatly increased in output; this statement is also true as regards lead and copper, although there are years when a decrease is noted. The production of all mined products through an average of a dozen years totals about \$29,000,000 per year. Zinc mining is becoming more and more profitable. The phosphate beds in southeastern Idaho have vast potential wealth.

Irrigation. There are about 2,500,000 acres of land that have been brought to fruitfulness by irrigation. Only two states have larger irrigated areas. World famous is the Arrowrock Dam, one of the highest masonry dams in the world—350 feet. Its crest is 1,100 feet long, and it has a reservoir capacity sufficient to cover with water 280,000 acres to the depth of one foot. The Salmon River project irrigates about 35,000 acres; this dam is 225 feet high. Two Twin Falls projects irrigate over 400,000 acres.

There are several lesser systems, each important in making Idaho a great irrigated section. See IRRIGATION.

Agriculture. The agricultural development of the state has bordered upon the marvelous. In the northern part of Idaho there is sufficient rainfall for growing all crops adapted to the climatic conditions of that

plains. Wheat is the most important crop, in bushels, followed by oats and barley, about equal in production, then hay.

The raising of live stock, especially sheep, cattle and swine, is an important branch of agriculture, and dairying and poultry raising are of growing importance. The state contains extensive pasture lands, and stock sel-



region. In the southern part two systems are followed: intensive farming upon irrigated land, and extensive farming, in which dry farming is practiced. The farmer receives ample returns for his labor from each system. Throughout the state, the soil, except on the mountains, is remarkably fertile, and nearly all crops can be successfully grown. The mild, equable climate and large number of sunny days make this an ideal region for raising fruit, and apples, pears, prunes, apricots, peaches and smaller fruits are grown in large quantities in the valleys and on the

dom requires shelter during the winter, conditions which give the stock grower a large profit on his investment.

Manufactures. The forest industry produces one-half of the state's manufactured products and employs sixty per cent of the industrial population. There are over 20,000,000 acres of white pine and other valuable timber trees, and the northern counties are considered to have the largest virgin white pine forests in the world. Much of this timber is yet beyond reach; nevertheless, there are sufficient accessible forest

areas to make lumbering the leading manufacturing industry of the state. The manufacture of flour and other grist-mill products is also important. Industrialists have developed more than 360,000 horse power from "white coal" the rushing mountain streams—but there remain a possible 5,000,000 horse power awaiting ultimate development.

Transportation. The streams are so rapid that they cannot be navigated; besides, many of them contain falls at frequent intervals. The southern part of the state is crossed by the Oregon Short Line; the northern part by the Northern Pacific, the Great Northern, and the Chicago, Milwaukee, St. Paul & Pacific. There are numerous spurs extending from these trunk lines to various localities. The state has 2,950 miles of railway, and more than 3,250 miles of surfaced roads. Air transportation is rapidly developing; two mail and passenger lines traverse the state, and a bureau of aeronautics has been established in the highway department. Municipal landing fields are popular local projects throughout the state.

Government. The legislative department consists of a senate and a house of representatives. Members of each are chosen at a general election for two years, and the legislature meets biennially. The executive department consists of a governor, a lieutenant-governor, a secretary of state, a state auditor, a state treasurer, an attorney-general and a superintendent of public instruction, each elected for two years. The judicial department consists of a state supreme court, district courts, probate courts and justice courts. The supreme court has five judges, who are elected by the people for a term of six years. The state is divided into eleven judicial districts for the administration of justice through the district courts, and each of these is presided over by a district judge.

In 1919, the Idaho legislature inaugurated a new feature in the administration of the state government. The reorganization measure known as the "Administration Consolidation Act" placed the functions of 51 old department, boards, and bureaus under the control of 9 administrative departments.

The state constitution was adopted in 1889, as a step preparatory to statehood, and it has been amended a good many times. This fundamental law is modern and progressive, though in no sense radical.

Items of Interest on Idaho

The elevation above sea level varies from 738 feet, at Lewiston, in Nez Perces county, to 12,078, at Hyndman Peak, which is near the boundary between Custer and Blaine counties; the average elevation is 4,500 feet.

The most prominent features of the Columbia Plateau section are the dry Snake River plains with the three elevations, Big, Middle and East Butte, rising from their midst; the plains, which cover about 30,000 square miles, extend from the southeastern part of the state in a curved course to the northwest for nearly 350 miles.

The Snake River, which receives almost all the drainage of Idaho, rises in the region of Yellowstone National Park only a few miles from the sources of the Missouri, whose waters reach the Gulf of Mexico, and of the Colorado, which flows into the Gulf of California. It drops approximately one mile in its 1,000 mile course through Southern Idaho, and is sometimes called the "Idaho Nile." Due to its great waterfalls and swift mountain streams, Idaho ranks with the leading states in potential and developed water power. The Snake River area has a milder climate than the rest of the state.

"Coeur d'Alene," signifying "heart of an awl," was the name of a tribe of Indians; it is said to have been first applied to an Indian trader because of his stinginess, but the name stuck to the tribe.

Eighty-two per cent of the farms are cultivated by the owners.

The waters of the state, contrary to common law practice, belong to the state.

Questions.

What is the area of Idaho?

What is the average elevation above sea level?

Describe the surface and locate the principal mountain ranges.

What does "Coeur d'Alene" mean?

What is the area of the irrigated lands?

Education. A radical change has been made in the administration of the public-school system. The legislature passed a law which provided that the entire system from the primary grades to the State University was to be controlled by a single board of education. One new board was given all the powers previously exercised by six boards. The legal name of this board is the State Board of Education and Board of Regents of the University of Idaho. It consists of five appointed members and the State Superintendent of Public Instruction, who is a member by virtue of his office. The governor appoints one member each year for a term of five years. The board appoints the commissioner of education who is its chief executive officer.

Besides the elementary and high schools, the Idaho public-school system includes these state institutions: the University of Idaho, at Moscow; the Lewiston State Normal; the Albion State Normal; the Idaho Technical Institute at Pocatello; the Idaho Industrial Training School at St. Anthony, and the State School for the Deaf and Blind at Gooding.

Institutions. The penitentiary is at Boise. The charitable institutions comprise hospitals for the insane at Blackfoot and Orofino; and a state sanitarium at Nampa. Other institutions are children's homes at Boise and Lewiston, and a Soldiers' home at Boise.

History. The first white men to visit Idaho were Lewis and Clark, who made explorations there in 1805-1806. The fur-trading era began in 1809, when the British North West Fur Company, of Montreal, Canada, erected Idaho's first trading post, Kullyspell House, on Lake Pend d' Oreille. Fort Henry, near the modern St. Anthony, was erected by Andrew Henry, a representative of the Missouri Fur Company, (1810). The outbound Astorians, the land expedition of Astor's Pacific Fur Company, crossed southern Idaho the following year (1811). The North West Fur Company reaped a golden peltry harvest from the Snake River and adjoining areas (1818-1821). The Hudson's Bay Company was the monopoly that practically controlled the fur-trading, stock, and mercantile business in the "Snake Country" (1821-1856). This corporation employed large trapping parties or "horse-brigades" (1823-1834). Fixed trading posts, Fort Boise (1834) and Fort

Hall (purchased from the American Wyeth, 1836) then became the bases for operations. The fur industry reached its height about 1840, suffering a rapid decline after 1846, the year Great Britain ceded Oregon to the United States. The Hudson's Bay Company retained its possessory rights in Fort Boise and Fort Hall, by terms of the treaty of 1846, abandoning these properties, however, in 1855 and 1856. There were many competitors of the Hudson Bay Company in the disputed "Snake Country," but most of them disappeared in time.

Leading pioneer missionary enterprises were the Presbyterian mission at Lapwai (1836); the Catholic mission near Lake Coeur d' Alene (1842); and the "Mormon" mission at Fort Lemhi, Lemhi County, (1855).

The emigration period (1842-1869) witnessed the march of a "prairie schooner" army of 300,000 emigrants over the Oregon Trail, 415 miles of whose route lay across southern Idaho.

Related Articles. Consult the following titles for additional information:
 Boise Lewiston
 Dry Farming Pocatello
 Lewis and Clark Snake River
 Expedition

IDAHO, UNIVERSITY OF, a state university, opened in Moscow in 1892. Tuition is free to all except non-residents of Idaho. The government is in the hands of a board of regents. The university maintains schools and colleges of agriculture, law, engineering, mining, forestry, education, and a college of letters and science, which includes courses in home economics, pre-medical studies, business and music. In normal years there is a student enrollment of about 2,000 and a faculty of about 165. The library contains more than 100,000 volumes.

IDEALISM, *i de' aliz'm*, in philosophy, a theory, that sensible or material objects do not exist outside of consciousness. Idealism makes the spiritual part of man the original and only true existence. See **REALISM**.

IDES, *idze*, in the Roman calendar, the fifteenth day of March, May, July and October and the thirteenth day of other months. Julius Caesar was assassinated on the Ides of March. In Shakespeare's play he is warned by a soothsayer to "beware the Ides of March."

ID' IOM, the name given to certain words or phrases which though in common usage in a language, do not admit of grammatical

analysis. The forms by which various nationalities express salutation are good examples of idiom. Americans say, "How do you do?" In France people greet each other with the equivalent of "How do you carry yourself?" The German equivalent is, "How goes it?" The term *idiom* is also applied to a dialect peculiar to a language.

IDIOT, a person who, from original defect, is almost destitute of intelligence, or in whom the intellect seems to be almost wholly wanting. The majority of idiots are of small stature and of weak constitution.

IDOL. The belief in the existence of a supreme being is very old, and speculation among primitive peoples in all lands has led to various conceptions of the form and nature of the deity. As men learned to carve in wood and stone they made images of the gods as they imagined them to be. In most cases an effort was made to represent the god as having human form; occasionally the supreme one was believed to possess likeness to some animal, and in many cases to partake of the form of both man and beast.

Idolatry. Such carved images seemed very wonderful to these childlike people; and since they could not see the gods, the image or symbol came to be regarded as a personification of the Almighty and as such was worshiped. Superman powers were accredited to the images, and they were appealed to as guides in all the affairs of life. The Biblical prophets warned men against idol-worship, and Mohammed, in the Koran, forbade the making of any image in wood, stone or metal. Among some of the tribes of Africa a form of idolatry known as *fetish* is common (see **FETISH**). The superstition there often leads to the worship of objects of nature which are believed to possess influence over man. With the spread of Christianity and enlightenment idolatry is gradually disappearing.

IDUN, *édoon*, in Scandinavian mythology, the wife of Bragi and the keeper of the apples of which the gods ate to preserve their youth and beauty.

IDYL or **IDYLL**, the name usually applied to a short and highly-finished descriptive poem, especially one which treats of pastoral subjects. This last characteristic, however, is not an essential of the idyl. All that is necessary to constitute a poem of this class is that it present to view a complete picture in small compass. Tennyson, however, used

the term to describe his elaborate poems treating of the King Arthur legend. They could properly have been called *Epics of the King*.

IGNATIUS, *ig na'she us*, **SAINT**, bishop of Antioch, one of the early Christian martyrs. Ignatius is supposed to have been born in Syria about the middle of the first century and to have been a disciple of the Apostle John. Seven Greek epistles bearing his name are included among the works of the apostolic fathers. These give evidence of intense religious enthusiasm. About A. D. 107, at the command of Emperor Trajan, Ignatius was thrown to lions in the arena at Rome (see **MARTYRS**).

IGNATIUS OF LOYOLA. See **LOYOLA**, **IGNATIUS OF**.

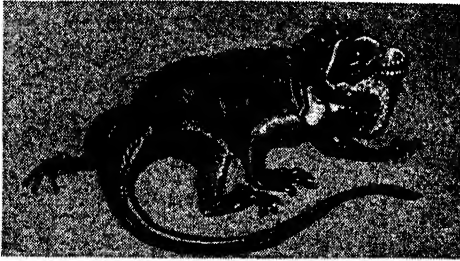
IGNEOUS, *ig'ne us*, **ROCKS**, in geology, those rocks which were formed by the action of heat. They include quartz, lava, basalt, granite and numerous others. Usually they are found to have been erupted from the heated interior of the earth and forced up to, or near, the surface. The word *igneous* means *fire*, or *burning*.

IGNIS FATUUS, *ig'nis fat'u us*, a term applied to a peculiar luminous appearance occasionally seen over marshy places at night. There are stories of its having been seen in churchyards, but these are generally regarded as superstitious tales. Will-o'-the-wisp and Jack-o'-lantern are other names given to this phenomenon. *Ignis fatuus* is the Latin for *foolish fire*. No satisfactory explanation for it has been given, but some believe that it is due to spontaneous combustion of gases.

IGORROTE, *e gor ro'tay*, a tribe or race inhabiting several islands of the Philippines. When American occupation of the islands occurred, the Igorrotes were savage head-hunters—that is, they sought battle with their enemies that they might carry human heads home as trophies. They are now civilized, and many are in the Philippine government service as police and (since 1936) as soldiers of the new nation.

IGUANA, *ig wah'nah*, a genus of lizards, natives of South America, Central America, Mexico and the southwestern part of the United States. The animal has an average length of about four feet and is olive-green in color. Along the entire length of its back, to the tip of its tail, there is a crest of pointed scales. It is a timid, defenseless creature, and lives much in trees, usually near

streams. It climbs easily by reason of its sharp claws. If pursued, it at once attempts to reach water, in which it swims swiftly and can remain submerged for several minutes. It lives on fruit and fungi, and de-



IGUANA

posits its eggs in tree-hollows. The flesh of the iguana is considered a table delicacy by South American Indians. One species, the *alligator lizard*, is found in the United States as far north as Tennessee. Certain species are valuable to farmers as destroyers of insects and harmful worms.

IGUASSU, *e gua soo'*, **FALLS**, a magnificent cataract eleven miles from the mouth of the Iguassú River, in Brazil. The falls are formed by a double drop, each of which is about 180 feet high. Few travelers have looked upon the cataract, because it is in the midst of a dense forest difficult to penetrate, but those who have journeyed to that point declare that the great waterfall is even more splendid than the falls of the Niagara.

IK MARVEL, *ike mahr'vel*. See MITCHELL, DONALD GRANT.

IL'IAD, the greatest epic of antiquity, attributed to the Greek poet Homer. There has been much controversy among scholars as to whether the *Iliad* originated with Homer or was merely folk-tale put into written form by him. It is even questioned by some investigators whether there ever lived such a person as Homer. The subject has occupied the world's greatest scholars and continues to be of absorbing interest.

The twenty-four books of the *Iliad* describe incidents of the Trojan War. To understand the description it is necessary to know the events which led up to the incidents related. Helen, the wife of Menelaus, king of Sparta, and the most beautiful woman of Greece, was stolen and carried off to Troy. To recover her and avenge the wrong, the Greeks, under command of Agamemnon,

king of Mycenae and brother of Menelaus, set sail to besiege Troy. Ten years they besieged the walled city without result, for the Trojans would not venture forth to combat, on account of their dread of the famous hero Achilles.

Then a quarrel started because Agamemnon had taken from Achilles one of his slaves. Achilles left the conflict and withdrew to his tent by the seashore. This is the point at which the *Iliad* begins, and much of the poem is devoted to the wrath of Achilles, its causes, effects and the manner in which it was appeased. The Trojans, secure in the absence of Achilles, came forth to meet the Greeks, and fifteen of the twenty-four books tell the varying fortunes of the conflict. Finally, Patroclus, the friend and kinsman of Achilles, begs Achilles to lend him his armor, and with it he goes into battle. The Trojans believe they see Achilles and flee in terror, but at length Patroclus is afflicted with a stupor by the god Apollo and is slain by Hector. To avenge his friend, Achilles returns to the combat, with a new suit of armor given him by Vulcan. He slays Hector and drags his body behind his chariot. In the last book King Priam begs of Achilles his son's body, and during a truce Hector is buried with fitting rites. The struggle is participated in by the gods throughout the poem, Mars and Apollo aiding the Trojans, Juno, Minerva and the other deities sustaining the Greeks.

Related Articles. Consult the following titles for additional information:

Achilles	Menelaus
Hector	Mythology, The Story
Helen	of the Trojan War
Homer	Troy

IL'ION. See TROY.

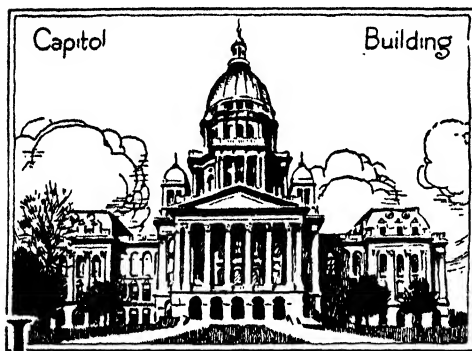
IL'TUM. See TROY.

ILLIMANI, *eel ye mah'ne*, one of the loftiest volcanoes in the Bolivian Andes, whose highest peak, of which there are four, is nearly 21,000 feet in altitude. On the mountain there is a lake about 15,000 feet above sea level.

IL'LINGTON, MARGARET (1881-1934), an American actress who excelled in the portrayal of emotional rôles. She was born at Bloomington, Ill., and her name in private life, before marriage, was MAUDE LIGHT. When she came to choose a stage name she used the first syllable of the name of her state, and the last two syllables of the name of her city, becoming in public life, Miss Illington.

She married Daniel Frohman in 1903, and in 1909, after her divorce from him, became the wife of Edward J. Bowes, of Seattle, Wash.

Miss Illington first appeared on the professional stage in the company of James K. Hackett, in the *Pride of Jennico*. She subsequently became a leading woman to E. H. Sothern in *If I were King*, in 1907 was co-star with Kyrle Bellew in *The Thief*, and from that time rose steadily to the position of independent star. Her starring ventures included *The Lion and the Mouse*, *His House in Order*, *Kindling*, *Within the Law*, *The Lie*, *Our Little Wife* and *The Eyes of Youth*. In 1917-1918 she was co-star with John Drew in Pinero's *The Gay Lord Quex*. Miss Illington also appeared in moving pictures. She possessed beauty and charm, and was an effective emotional actress.



ILLINOIS, *ilinoi'*, or *ilinoiz'*, the twenty-third state of the American Union in size (56,665 square miles) and third in population (7,630,654 in 1930), being surpassed by New York and Pennsylvania in the number of inhabitants. Illinois registers 136.2 persons to the square mile. Cook County, which includes the great city of Chicago and its populous suburbs, contains more than 51 per cent of the people of the state.

Illinois is appropriately called **THE PRAIRIE STATE**, a name that emphasizes the character of its surface. The Mississippi River forms the entire western boundary of the state; Wisconsin is on the north; Lake Michigan, Indiana are on the east and Kentucky lies to the south; the states of Iowa and Missouri face Illinois across the Mississippi River.

Though the southern part of the state is now less thickly peopled than the central and northern areas, it was the southern section

that was first settled. When Illinois became a state in 1818, its admission to the Union was granted because of the ambitious settlements in the south; there were few people north of Springfield; the site of the city of Chicago was then a small trading post. The early settlers came into Illinois largely from Kentucky and Tennessee; among these was the family of Abraham Lincoln, so that this migration from the south gave the future Great Emancipator to Illinois. Not until after the completion of the Erie Canal in 1825 did the western trend of settlement appreciably affect the northern part of the state.

Surface and Drainage. The state lies within the Great Central Plain with its northeastern counties touching the "Lake Region." It has an average elevation of 500 feet above the sea, but rising to 1,200 feet in the extreme northwest. The surface as a whole is a broad plain, sloping gradually to the south and southwest. In the northern part the surface is undulating, with occasional bluffs along the streams. The central district is level with the exception of the lands adjoining the rivers. This region is characterized by a deep, fertile soil, so rich in fact that it is named as one of the garden spots of the world.

The bluffs along the Mississippi, the Rock and the Illinois Rivers form delightful scenery in many localities. Black Hawk's Watch Tower, near Rock Island, and Starved Rock, on the Illinois River near Utica, are especially noted because of their historical associations as well as for their beauty. In the southern counties there are numerous picturesque valleys and charming ravines in a spur of the Ozark Mountains that crosses the southern part of the state from west to east: here arise many hills having an altitude of from 1,200 to 1,400 feet above sea level. These hills rise abruptly in their northern slopes, but descend to the level of the Ohio River more gradually. In consequence of this feature the seven southern counties are more diversified in surface than any other part of the state.

The important rivers are the Rock, crossing the northwestern region; the Fox draining into the Illinois, and the Des Plaines and Kankakee which unite to form the Illinois which is the largest stream within the state. This river flows westerly and southwesterly until it reaches the Mississippi, at a point about twenty miles above the conflu-

ence of that river and the Missouri. The Illinois flows for the most part in a deep channel, and is bordered by high bluffs. The principal streams in the central and southern parts of the state are the Sangamon, an important tributary of the Illinois; the Kaskaskia, which flows nearly across the state in a south-southwest direction and joins the Illinois; and the Big Muddy which empties into the Mississippi. On the east are the Embarras, the Little Wabash with its tributary, and the Saline.

In the northeastern corner are Fox and Grass lakes and a few other smaller bodies of water. There are numerous shallow lakes in the bottom lands along the Illinois, Mississippi and Ohio rivers. Peoria lake is formed by an expansion of the Illinois River.

A new chapter in drainage and shipping in Illinois began in 1900 when the Chicago Drainage Canal (which see) was completed. This canal connects the Chicago River with the Des Plaines River and involves the flow of water from Lake Michigan through these rivers into the Illinois River.

Climate. The extent of the state from north to south is such as to cause considerable difference in the climate of the extreme sections. Temperature in the southern counties averages 11 degrees warmer than that of the northern counties. The entire state is subject to sudden and excessive changes in temperature, but extremes of heat and cold are of short duration. The climate in most localities is healthful. The average rainfall is thirty-eight inches; it is heavier in the south than in the north, but the greater fertility of soil in the north more than compensates for the deficiency in rainfall.

Mineral Resources. The value of annual mineral production in Illinois is nearly half that of her agricultural products. More than half a million dollars worth of mineral wealth is produced each working day of the year. The minerals include coal, oil, natural gas, clay, molding sands, glass sands, gravel, agricultural limestone, fluxing limestone, lime, wool rock, building stone, fluor spar, tripoli, fullers' earth, kaolin, lead, zinc and pyrite. Illinois has ranked third among the states in the value of these products.

The chief mineral product in Illinois is coal. Coal was first discovered in America in 1673, in Illinois, near Starved Rock. Eighty counties are underlaid with coal; there are mines in 53 of them. Illinois ranks high

among the states in the production of bituminous coal. Although more than 2,000,000,000 tons of coal have been mined in Illinois, it is estimated that only 2 per cent of the Illinois coal has been removed. Production reached 89,979,469 tons in 1918, but the average production is between 40,000,000 and 60,000,000 tons yearly. The southeastern Illinois oil field has produced a total of 403,000,000 barrels which places it high among all great fields. Petroleum and natural gas are produced in eleven counties; the average production of petroleum is about 5,000,000 barrels annually. Clay products manufactured in Illinois are twice as valuable as the gold mined in California each year. Illinois surpasses most of the states in the manufacture of brick and tile.

Limestone is the most widely used of all rocks; the material is used extensively in agriculture, road building, construction and in the manufacture of lime. Fluor spar is widely used as a flux in the steel industry. The deposits of this mineral in southern Illinois and in adjacent parts of Kentucky are the largest deposits of the kind in the world and furnish 95 per cent of all that is mined in the country.

Agriculture. Illinois is one of the foremost states in the extent and value of its agricultural products. Farms occupy more than 85 per cent of the land area of the state; many of the districts once were huge swamps. The wide climatic range admits of a great variety of crops. Corn is the leading crop; the annual planting is about 10,000,000 acres, and the annual production is between 224,000,000 and 400,000,000 bushels, making this the second state in the Union in growing this important crop. Large quantities of oats are raised; this is the second crop in importance, with about 80,000,000 bushels as the yearly yield. Hay and forage are next in value; then follow wheat, potatoes, barley and rye, although the last two are not as extensively grown as other cereals.

Nearly all sections of the state are adapted to fruit raising; in the northern and central areas apples, cherries and pears are raised; south of the center peaches, plums, apples and small fruits, especially strawberries, are grown in large quantities. Illinois makes notable records in raising broomcorn, gooseberries, sunflower seed and grass seed.

The abundant corn and hay crops, with the extensive grazing areas make Illinois an ideal

state for the raising of livestock. Large numbers of hogs and cattle are marketed; horses are raised throughout the state; an extensive dairy business is conducted in the northern region.

Manufactures. Notwithstanding its adaptability to agriculture, Illinois is the third state in the Union in the extent and importance of its manufactures, being exceeded by New York and Pennsylvania only. The reasons for this position of Illinois as a manufacturing state are the abundance of cheap fuel furnished by the coal deposits and the unusual facilities for transportation afforded by Lake Michigan and over thirty railway lines centering in Chicago. About 75 per cent of the manufactures of the state are produced in and about Chicago. The most important industry of this city is slaughtering and meat packing. Next in order come the following industries: electrical machinery and supplies; agricultural implements; iron and steel products, flour, grist-mill and other products; printing and publishing. Cities outside of the Chicago area listed in order of importance as to manufactures are Rockford (furniture), East St. Louis, Peoria (liquors), Granite City, Decatur, Moline (farm machinery), Joliet (steel), Rock Island, Elgin (watches), Pekin, Aurora, Springfield and Freeport.

Transportation. Illinois contains over 12,500 miles of railway, a larger mileage than any other state except Texas. Chicago is the terminus of trunk lines whose combined mileage exceeds 60,000. Among the important lines crossing the state are the Illinois Central; the Chicago & Alton, the Chicago, Milwaukee, St. Paul & Pacific; the Chicago & North Western; the Chicago, Burlington & Quincy; the Atchinson, Topeka & Santa Fé; the Chicago, Rock Island & Pacific, and the Chicago & Eastern Illinois. A number of trunk lines from the East also terminate in Chicago. There are more than 3,300 miles of electric lines; one important line connecting Chicago with Aurora and Elgin; another extending from Chicago to Milwaukee in Wisconsin; and a system joining Peoria, Bloomington, Springfield, East Saint Louis, Decatur, Champaign and Danville.

The Mississippi and Ohio are navigable along two borders of the state, and light draft boats pass through the Illinois River and the drainage canal to Chicago. (See DRAINAGE CANAL, CHICAGO). The Illinois-Mississippi

or Hennepin Canal connects the Illinois River at Hennepin with the Mississippi at Rock Island. Lines of steamers ply between Chicago and the ports on the Great Lakes and Saint Lawrence River as far as Montreal.

Overland transportation by bus is available on 13 important bus lines. There are 30 airports in the state and six air routes serve the traveling public. The surfaced roads of the state amount to 22,000 miles.

Government. The legislative department consists of a senate and a house of representatives. The state is divided into fifty-one senatorial districts, each of which is entitled to one senator and three representatives. The senators are chosen at popular elections for a term of four years, but the districts are so classified that the terms of one-half of the senators expire every two years. The 153 members of the house of representatives are chosen for two years, and the statute contains a peculiar provision by which the voter may cast three votes for one representative, one vote for each of three representatives or one and one-half votes for each of two representatives.

The executive department consists of a governor, a lieutenant-governor, a treasurer, a secretary of state, an auditor, an attorney-general and a superintendent of public instruction, each of whom is elected for four years, with the exception of the treasurer, whose term is two years and who is not eligible for immediate reelection. The governor is assisted by a cabinet of nine directors, each at the head of a department of the state government. The superintendent of public instruction is elected in the middle of the term for which the governor and other state officers are chosen. At the head of the judicial system is the state supreme court, comprising the judges of the seven judicial districts into which the state is divided, the judges being elected for nine years. The judges of these districts choose one of their number as chief justice. The clerk of the supreme court is elected for a term of six years. Below the supreme court are appellate courts, circuit courts and county courts; the larger counties have probate courts. At the bottom of the judicial system are the justice courts, which have jurisdiction over petty cases. The local government is administered through county and township officers.

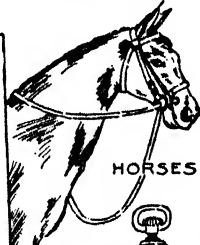
Education. The state of Illinois maintains an excellent system of public schools

**PACKING HOUSE
PRODUCTS**



ILLINOIS

"By thy rivers gently flowing,
Illinois, Illinois,
O'er thy prairies verdant growing,
Illinois, Illinois,
Comes an echo on the breeze,
Rusling through the leafy trees,
And its mellow tones are these,
Illinois, Illinois."



HORSES



**ELECTRICAL
GOODS**



WATCHES

**MANUFACTURED
ARTICLES**



COAL



CHERRIES



**STRAW-
BERRIES**



CORN

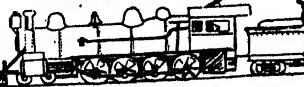
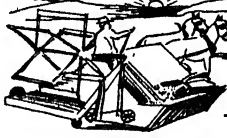


BARLEY

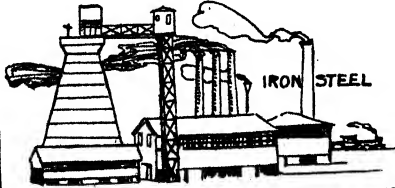


**WHEAT
& OATS**

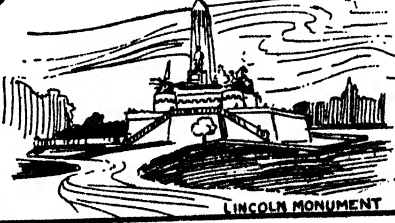
**AGRICULTURAL
IMPLEMENTS**



GREAT IN R.R. MILEAGE



IRON STEEL



LINCOLN MONUMENT



**ILLINOIS
"PRAIRIE STATE"**

on the district plan for the elementary schools with an additional provision for township and community high schools in any community which by a majority vote authorizes the establishment of this kind of organization.

There are in the public schools over 47,900 teachers, and over 1,400,000 children enrolled. The annual expenditure for public school education in this state is over \$100,000,000. The legislature appropriates for support of the public school system \$10,000,000 annually, as aid for needy districts.

The University of Illinois at Urbana is supported by taxation. The state teachers colleges are located at Normal, Carbondale, De Kalb, Charleston and Macomb. Institutions for higher education supported by private endowment include, among others, the University of Chicago, Northwestern University, Evanston; Armour Institute, Chicago; Lake Forest College; Eureka College; Illinois Wesleyan University, Bloomington; Augustana College, Rock Island; James Millikin University, Decatur; Loyola University and De Paul University, both in Chicago.

Other Institutions. Schools for the deaf, dumb and blind are maintained at Jacksonville; homes for the feeble-minded are conducted at Dixon and Lincoln; the state penitentiaries are at Menard and Joliet; hospitals for the insane are located at Chicago, Manteno, East Moline, Chester, Jacksonville, Alton, Peoria, Anna, Kankakee and Elgin. There is a soldiers' and sailors' home at Quincy and a soldiers' orphans' home at Normal; the United States soldiers' home is at Danville; the soldiers' widows' home is at Wilmington; the industrial home for the blind at Chicago; a school for delinquent boys at St. Charles; a Woman's reformatory at Dwight; the state farm at Vandalia; the Illinois eye and ear infirmary and the research and educational hospitals at Chicago.

Cities. There were in 1930 fifty-eight cities in the state each having a population of more than 10,000. The first five, in order of size, are Chicago, Peoria, Rockford, East St. Louis and Springfield.

History. Marquette and Joliet were the first white men to visit Illinois. They sailed upon the Illinois River in 1673. In 1680 La Salle built Fort Crevecoeur (the broken heart) near Peoria, and in 1682 Fort Saint Louis was erected on Starved Rock. Settlements sprang up at various points, the first being at Kaskaskia, about 1720. In 1763 the

territory came into ownership of the English, at the conclusion of the French and Indian War. During the American Revolution, Colonel George Rogers Clark captured British posts on the Mississippi and at Vincennes, Indiana. By treaty Illinois was ceded to the United States in 1783; in 1787 it became a part of the Northwest Territory.

Certain features of early pioneer life are represented in the founding in 1783 of the first school in Illinois and of the first Baptist church in 1796, both at New Design; the building of the first Methodist church at Shiloh in 1793 and of the first Presbyterian church in 1820. The first newspaper was published at Kaskaskia in 1814—*The Illinois Herald*. The first "seminary" was opened in 1827 at Rock Springs; it later became Shurtleff College.

Illinois was organized as a separate territory in 1809, with the capital at Kaskaskia and was admitted into the Union on December 3, 1818. The famous Indian massacre at Fort Dearborn (which see) occurred in 1812. Indian troubles culminated in the Black Hawk War in 1832 after which the red men were removed from the state. The Illinois and Michigan Canal was planned for in 1837 and was completed in 1848. Conflicts with the Mormons at Nauvoo arose in 1839; seven years later they removed to Utah. The building of railroads in Illinois was greatly aided by a grant of lands from Congress in 1850 to the Illinois Central Railroad; this materially assisted the state on the way to prosperity.

Illinois has always taken a large part in national politics since the days of the famous Lincoln-Douglas debates in 1858; as a consequence of this encounter Douglas lost his opportunity to become the president of the United States and Abraham Lincoln was placed where his growing reputation insured his election to the presidency. Later events of importance are the Chicago fire of 1871, the anarchist riot of 1886, the World's Columbian Exposition of 1893, the riots connected with the railroad strike of 1894, the rise of the city of Chicago as second largest and most important in the nation, the Century of Progress World's Fair in 1933-1934.

Illinois has had three constitutions: the first was adopted in 1818, the second in 1848 and third in 1870. There have been repeated efforts within recent years to secure a revision of the constitution or the adoption of

Items of Interest on Illinois

Licenses for motor vehicles in Illinois yield a revenue of some \$17,000,000 collected from the owners of 1,500,000 vehicles.

Radios are owned by 60 per cent of the urban families and 40 per cent of the rural families with an average for the state of 55.6 per cent.

A Lincoln Memorial has been set up at New Salem where Abraham Lincoln once served as postmaster and merchant. Thirteen log cabins on the 200-acre tract have been restored.

There are 11 state parks in Illinois; 25 historical monuments and 13 historical memorials.

Among the distinguished men and women intimately connected with the history of Illinois are: Abraham Lincoln, the martyred President; General Ulysses S. Grant; Cyrus H. McCormick; Marshall Field; Joseph G. Cannon; Frances E. Willard; Robert G. Ingersoll; Frank W. Gunsaulus.

Consumers of electric service in Illinois number more than 2,000,000.

A bond issue of \$100,000,000 to be spent on hard-surfaced roads proves that there is a deep popular concern for improved highways.

The new day dawn for inland water transportation occurred in 1933 when traffic from Chicago to New Orleans was opened on the Lakes to Gulf Waterway.

Illinois has more than 275 streams, grouped in two large river systems, one having the Mississippi and the other the Wabash or Ohio as outlet; the Mississippi receives about three-fourths of the drainage.

At Cairo the prevailing winds are from the south, and as far north as Springfield they are southerly except from January to April; but in the northern half of the state the prevailing winds are from the north, northeast or northwest.

The forest area, about 10,000 square miles, is almost wholly in the southern counties.

There are over thirty direct and indirect products made from corn by the glucose

plants in the state.

For thirty years Illinois had a larger railway mileage than any other state in the Union, but the total is now second to that of Texas.

Farms occupy more than 85 per cent of the land area of the state; many districts were once huge swamps.

Illinois gains much international fame from the great metropolitan development in its chief city—Chicago; however, the rural section of the state has contributed of men and wealth freely to its wonderful achievements.

Questions on Illinois

What is the area of Illinois? The population?

How does it rank among the states in population?

What is the average elevation above the sea level?

In what way is the climate remarkable? In what occupations are the people engaged?

Name the national flags that at different times have floated over the state.

What historical events occurring in Illinois deserve special commemoration?

What waterways for transportation have been built or planned for in order to serve this state and its neighboring territory?

From what parts of the country have people migrated so as to settle in Illinois?

A century of progress in Illinois has worked out many changes in agricultural conditions; name some of them.

Name and describe briefly some of the notable men and women connected with the state's history.

What proofs show the progressive and cultured interests and tastes of Illinois people?

What has become of the Indians formerly living in this state?

Since the early settlers came to the southern counties with their strong and aggressive character how did it happen that the largest city did not grow up in the southern part of the state?

a new one. There have been also three capitals—Kaskaskia, Vandalia and Springfield.

Related Articles. Consult the following titles for additional information:

GEOGRAPHY

Alton	Kankakee
Aurora	Kewanee
Belleville	La Salle
Bloomington	Lincoln
Cairo	Mattoon
Canton	Moline
Champaign	Monmouth
Chicago	Mount Vernon
Danville	Ottawa
Decatur	Pekin
De Kalb	Peoria
East Saint Louis	Peru
Elgin	Quincy
Evanston	Rockford
Freeport	Rock Island
Galena	Rock River
Galesburg	Springfield
Granite City	Streator
Illinois River	Urbana
Jacksonville	Waukegan
Joliet	Wabash River

HISTORY

Black Hawk	Joliet, Louis
Century of Progress	Marquette, Jacques
Exposition	Mormons
Chicago Drainage	Ordinance of 1787
Canal	World's Columbian
Clark, George Rogers	Exposition
Illinois (Indians)	

ILLINOIS, a group of Indians belonging to the Algonquian family, who held at one time the territory now roughly included in Illinois, Missouri, Michigan and Iowa. La-Salle and his French followers won the friendship of the Illinois tribes, and in the French and Indian Wars they caused the English settlers much trouble. After the War of 1812 the United States had difficulty in subduing them.

ILLINOIS, UNIVERSITY OF, a coeducational state university. It occupies a campus and farm of about 1,200 acres adjoining Champaign and Urbana, with 669.5 acres elsewhere. It was founded in 1867 as the Illinois Industrial University, but the name was changed to the University of Illinois in 1885. The departments of instruction and research include liberal arts and sciences, commerce and business administration, fine and applied arts, journalism, physical education, engineering, agriculture, law, education, library science, military science, graduate, United States agricultural experiment station, engineering experiment station, bureau of educational research, bureau of business research and state scientific surveys (water, geology, mineral resources, natural history). The colleges of medicine, dentistry and pharmacy are located at Chicago. The libraries contain over a million volumes.

Facilities for research have been increased since the state department of Registration and Education established offices in the University at Urbana; likewise the state department of Public Welfare maintains offices in connection with a group of hospitals and laboratories in the university buildings in Chicago.

Some of the distinguished men who have held the presidency are Andrew S. Draper, Edmund J. James, David Kinley and Harry Woodburn Chase. The student enrolment exceeds 11,000 and the faculty numbers about 1,300.

ILLINOIS AND MICHIGAN CANAL, a canal connecting Lake Michigan, at Chicago, with the Illinois River, at La Salle, Illinois. It is ninety-six miles long. It was begun in 1836 and completed in 1848. The development of railways long since rendered the canal useless as such, but the route has been designated as useful as a possible superhighway for overland transportation.

ILLINOIS RIVER, a river in Illinois formed by the union of the Kankakee and the Des Plaines, in the northeast part of the state. It flows southwest and empties into the Mississippi about 20 miles above the mouth of the Missouri. It is 500 miles long and now forms a part of the Lakes-to-Gulf Waterway (see DRAINAGE CANAL, CHICAGO).

ILLITERACY, *il lit' ur- a- si*, as generally understood, the state of being unable to read or write. Frequently, however, as in the United States census reports, the term is applied to those who can read but cannot write. The percentage of illiterates depends upon the educational facilities and regulations within a country, those countries having the smallest percentage which have the most stringent laws regarding compulsory education.

The progress of education throughout the world has been so rapid in the twentieth century that illiteracy statistics are now seldom included in the census of the chief nations. Public schooling is now compulsory in most countries, and where rigorously enforced illiteracy has been greatly reduced. The northern nations of Europe are much more literate than the southern. Soviet Russia claims that the percentage of illiteracy there has been reduced from 69 per cent in 1897 to 25 per cent in 1931.

In Canada, of the population over six years of age, 8.48 per cent are unable to

read. The percentage of illiteracy is highest among the foreign-born, and lowest among the British-born.

United States. The illiteracy rate in the United States is affected by the backwardness of certain elements in the population, notably the negroes in the South and alien immigrants from unprogressive European countries. The rate for each state is shown in the following table (1930 census) :

STATE	PER CENT	STATE	PER CENT
Alabama	12.6	Nebraska	1.2
Arizona	10.1	Nevada	4.4
Arkansas	6.8	New Hampshire..	2.7
California	2.6	New Jersey	3.8
Colorado	2.8	New Mexico	13.3
Connecticut	4.5	New York	3.7
Delaware	4.0	North Carolina..	10.0
Florida	7.1	North Dakota..	1.5
Georgia	9.4	Ohio	2.3
Idaho	1.1	Oklahoma	2.8
Illinois	2.4	Oregon	1.0
Indiana	1.7	Pennsylvania ..	3.1
Iowa	0.8	Rhode Island ..	4.9
Kansas	1.2	South Carolina..	14.9
Kentucky	6.6	South Dakota ..	1.2
Louisiana	13.5	Tennessee	7.2
Maine	2.7	Texas	6.8
Maryland	3.8	Utah	1.2
Massachusetts ..	3.5	Vermont	2.2
Michigan	2.0	Virginia	8.7
Minnesota	1.3	Washington	1.0
Mississippi	13.1	West Virginia .	4.8
Missouri	2.3	Wisconsin	1.9
Montana	1.7	Wyoming	1.6

ILLUMINATION. Sometimes, in this era of electricity, a storm puts the power system out of commission, and all the lights in the house go out. We fumble for matches and search for candles, or sit in the darkness until the welcome light returns. At such times we realize how much we owe to lighting for comfort, happiness and progress. It is difficult to imagine the time when there was no artificial illumination, but such was the case in the dawn of civilization.

The First Lighting. Early man reckoned time in the coming and going of light and in the seasonal changes. Light was the time of lesser fears. Often, during the dark, when thunder rolled and lightning flashed, a tongue of flame sprang from a cloven tree. Fanned by the wind, it spread over the forest, and man, gazing in wonder, learned the power of light and heat in time of darkness. When the fire burned low, someone, braver than the rest, carried a glowing ember to his abode. He placed the ember among dry tinder and saw new flames arise. Next he learned to create the light-giving fire by striking stones

together and letting the sparks fall on dry tinder; or he produced sparks by boring a pointed stick into a piece of wood.

Though we shall never know how and when man first carried fire with him, it is fair to assume that upon some dread excursion into the dark, some man snatched a half-burned stick from the "home" fire and carried it with him as he made his way through the darkness. Likewise we shall never know the origin of the first lamp, but it was probably a skull or hollowed stone, filled with melted fat and dropped in a lighted piece of dry moss. In many large museums are collections of lamps gathered from excavations of dwellings of the ancient past. The very earliest lamps in existence were found in European caves and are of hollowed stone. Others are of sun-dried or burnt clay. As man passed into the metal age, lamps were made of bronze, iron and other metals. The first wick was a strip of moss or the pith of a reed. Later, coarse cloth, tow and papyrus were used for wicks, and grooves were scooped in the receptacles to make places to hold them. The discovery that fat would burn led to the invention of the candle.

Later Improvements. The first lamp carried to America by the Pilgrims was the Betty lamp (from the German "besser" or "better"), so-called because of an improvement in the form of a nose or spout which held the wick. The body was made of iron, cast or wrought in one solid piece. Whale oil became the chief fluid used in these lamps, and remained so until superseded by kerosene. The outstanding improvement was made in 1784 by the Swiss scientist, Aimé Argand. He invented a burner consisting of two short brass tubes, of unequal size, and a woven circular wick, which was set between the two cylinders. The wick gave forth a bright clear light, and the lamp was shortly after improved by a glass chimney, the invention of one of Argand's assistants.

About the time that Argand introduced his improved lamp, men in the British Isles, France and Germany were experimenting with "bubbling water," which spouted mysteriously from the earth, would burn when lighted, and which the superstitious believed to be "devil fire." This substance was escaping coal gas. In 1792 William Murdock, a Scotchman living in England, burned gas for light in his home, being the first man to put it to practical use. Others were urging that

streets have gas illumination, an improvement which was introduced into America in 1817 in the city of Baltimore. Later came the Welsbach mantle for better lighting. Still men were not satisfied, and out of the need for better illumination came the invention of electric lighting, described elsewhere in these volumes under **ELECTRIC LIGHT**. See, also, **CANDLE**; **GAS ILLUMINATING**; **KEROSENE**; **MATCHES**; **SAFETY LAMP**; **WELSBACH BURNER**.

ILOILO, *e lo e'lo*, PHILIPPINE ISLANDS, the capital of a province of the same name, situated on the southeastern coast of the island of Panay. It is second only to Manila in importance as a commercial center, and has an excellent harbor. Its chief exports are sugar, tobacco, rice, coffee and dyewoods. The most important line of manufacture is the weaving of fabrics of various kinds. The chief buildings are a seminary, a church and the government building. Population, estimated, 48,000.

IL TROVATORE, or **THE GYPSY'S VENGEANCE**, an opera by Giuseppe Verdi, was first given a public performance in Rome in 1853. The time of the drama is the Middle Ages; the place, the Spanish province of Aragon. The plot, highly romantic, weaves together the destinies of two families, one a nobleman's, the other, an old gypsy's. The gypsy is superstitiously believed to be a witch, responsible for the illness of the nobleman's child, and is accordingly burned at the stake. The opera is concerned with a series of events which result from the unjust deed and culminates tragically when the gypsy's daughter takes vengeance. *Il Trovatore*, because of its haunting melodies, is one of the most popular of all grand operas.

IMAGE WORSHIP. Primitive man, subject to innumerable fears because he was ignorant and superstitious, imagined that meteorites falling from the sky were sent by supernatural beings. To worship these mysterious stones was a natural development, and it is probable that image worship originated in some such way as this. The next step was to make painted or graven representations of gods or of the lower animals as objects of worship. When the Israelites, in their journey to the Promised Land, came to the wilderness of Sinai, Moses gave them the Law as embodied in the Ten Commandments. The first of these forbade the people

to make any graven image or any likeness of anything in heaven, earth or water, or to bow down and worship such images. Throughout the Old Testament there is the story of recurring struggles between the spiritual conception of the unseen God of revelation and the graven image with its appeal to the senses. While the Israelites often lapsed from the ideal placed before them, it was the spiritual element of their worship in its highest form that set them apart from the idolatrous nations of the East.

In the early history of Christianity, certain abuses crept into the Church through the worship of images of the saints and of Christ. The second Council of Nicaea defined the proper use of such images as religious symbolism, with the image venerated for what it represented. This is the present position of the Roman Catholic Church. In the Greek Church, veneration only of pictures and of the image of Christ is permitted. See **IDOL**; **ICONOCLASTS**.

IMAGINATION. When the mind forms pictures of past experiences, memory is acting. When it reconstructs these pictures and creates images not previously existent, imagination is exercised. Some psychologists consider imagination to have three phases. The *modifying* phase, common to all children, is exemplified in the child's ideas of giants and fairies. In the exercise of the *mechanical* phase, parts of objects are joined in such a way as to show no proper relation between them, as in the joining of the head and shoulders of a man to the body of a horse. Numerous examples may be found in the literature of mythology.

The most important phase is the *constructive*, whereby various elements present in the imagination are combined to form a complete image of something useful or beautiful or both. Every invention was first conceived in the mind of the inventor, and imagination produced such structures as the Brooklyn Bridge and the Panama Canal. In the realm of art and literature, imagination brought forth the *Sistine Madonna* and *Paradise Lost*. The constructive imagination causes us to establish ideals and thus is an important factor in the building of character. It also has much to do with one's happiness. A trained imagination is the basis for a happy, useful life. Aimless day-dreaming may lead to incapacity for concentrated effort of any kind.



IMMIGRATION AND EMIGRATION. These two terms signify the removal of people from one country to another for the purpose of residence. From the standpoint of the country which receives them, such travelers are *immigrants*, or *incomers*; from the viewpoint of the country they leave, they are *emigrants*, or *outgoers*.

The causes of such removal are as varied as human motives and temptations; but among the important ones are over-population, industrial and economic depression, religious or political oppression, the spirit of adventure and the desire for fame and fortune. In barbarous times a tribe, having exhausted the tract on which it had established itself, naturally migrated to more tempting territory. In Greece, the limited territories of the states rendered the occasional deportation of part of the inhabitants to new colonies a necessity; while at Rome, where the land was held by a few proprietors, and the trades and professions were mainly exercised by slaves, the larger part of the free population eventually had to occupy conquered territory in Italy and elsewhere. In modern times, however, people migrate not as nations or tribes, but as individuals, though thousands of the same race may decide to emigrate in the same year.

Immigration to the United States. The first immigrants who made a permanent settlement in what is now the United States were the English colonizers of Jamestown (1607). In 1620 the Pilgrim Fathers reached the "stern and rockbound coast" of New England. They were followed by the Quakers and Germans, who colonized Pennsylvania; the Dutch, who made settlements in New York; the Swedes, who took possession of Delaware; and the French, who established themselves in Louisiana. Not until 1815 was the tide of immigration rapid enough to cause particular comment, but after that there was a gradual increase until the high-water mark was reached in the years 1907 and 1914. In 1820 the first accurate statistics of immigration were compiled, and in 1864 the first laws on the subject were passed.

No other country on the globe has had its population increased by alien immigrants in the same proportion as the United States. Between 1820 and 1914, the year of the outbreak of the World War, about 32,000,000 aliens entered the ports of the country, exclusive of temporary arrivals. In 1913 the permanent comers numbered 1,197,892, and in 1914, 1,218,480. In 1915 there was a drop to 326,700, because of war conditions, and by 1918 the immigration tide had further decreased.

Prior to 1880 the British Isles furnished more immigrants than any other country. Germans came in larger numbers until 1890. Thenceforward the greater number of aliens came from Eastern and Southern Europe, increasing each decade until 1914. Since that year European immigration has become almost a negligible factor.

During 1932 and 1933 for the first time emigrants exceeded the immigrants in numbers; in 1933, 23,068 were admitted for permanent residence while 80,081 alien residents left for permanent residence abroad. The total admissions for three consecutive years have been 241,700, 97,139 and 35,576. The reasons for this decline in alien residents in the United States are the restrictions on immigration, more careful selection of aliens admitted, aliens abroad noting the lack of labor demand in this country and the unwillingness of their American friends to support poverty-stricken relatives.

Restriction of Immigration. Immigrants who were needed for the development of agriculture and as laborers in industry have been welcomed and even sought after. With the practically complete occupation of western farm lands and the development of a large body of resident workers in mills and mines the arrival of vast numbers of alien workers no longer could be tolerated. At the same time health authorities and social workers aroused public opinion against admitting "undesirables"—the ignorant, the vicious, the moral degenerate, the insane, the criminal, and the diseased.

Congress has passed numerous laws regulating the admission of immigrants. In 1882 Chinese immigration was suspended for ten years and at the end of that period the suspension was continued indefinitely (see **CHINESE IMMIGRATION**). In 1917 Congress passed over President Wilson's veto a bill which restricted immigration to those able

to read at least one language. In 1921 Congress passed a law further limiting immigration, by establishing quotas for the different countries from which immigrants come. The limit was three per cent of the number of foreign born persons of each nationality resident in the United States as shown by the census of 1910. In 1924 the limit was placed at two per cent of resident foreign born persons as given in the census of 1890 and certain nationalities were excluded altogether.

Under the quota system the number of immigrants from any given country for a year is definitely fixed; a few of these quotas may be listed: Great Britain and Northern Ireland, 65,721; Germany, 25,957; Irish Free State, 17,853; Poland, 6,524; Italy, 5,802; Sweden, 3,314; Netherlands, 3,153; France, 3,086; the following and others have the minimum quota of 100; Armenia, Australia, Bulgaria, China, India, Japan, New Zealand, Siam, Union of South Africa.

But the laws provide for immigrants outside of the quotas; these are called nonquota immigrants. They include unmarried children under 18 years of age, a husband or a wife of a citizen of the United States, immigrants previously admitted returning from a brief visit abroad; natives of Canada, Newfoundland, Mexico, Cuba, Haiti, Dominican Republic, Canal Zone, or an independent country of Central or South America; ministers, college professors, college students, and women who have been citizens but who have lost citizenship by marriage. Porto Ricans and Filipinos have the privileges of American citizens in entering or leaving the States of the Union.

Immigration in Other Countries. In Canada immigrants are admitted according to the demand for labor. The British dominions have established the right to limit immigration from the mother country. Latin American countries have no restrictions on immigration. Because of a decline in immigration Brazil offered fresh inducements. One state granted 2,500,000 acres to 40,000 Japanese immigrants; Germans received 2,400 acres. In Argentina 80 per cent of the immigrants were formerly Latin persons; in later years the ratio has decreased to 70 per cent.

IMMORTALITY, exemption from death; the state of everlasting life. The belief in the immortality of the soul is very ancient. It is a fundamental part of nearly all reli-

gions, though infinite are the varieties of individual and racial conceptions concerning it. In general, it means the endless continuation of personality, consciousness and will. In the minds of most men belief in God and the belief in immortality are intimately associated, and have been from the earliest times. Among rude peoples the life after death is thought to differ little from life before death—an existence wherein the hunter renews the chase and his bodily sensations do not change. The Greeks and Romans believed life continued after death, but only as a shadow of the physical existence. Among some sects a belief is held in the doctrine of transmigration, the passing of the soul after death into another body or successively into several bodies, either human or animal.

IMMORTELLE, *im mort el'*, from a French word meaning *immortal*, is applied to a small, strawlike flower which does not wither or lose its color. The flowers last indefinitely, but eventually become so dry they fall to pieces. This flower is sometimes called *everlasting flower*.

IMMUNITY, a term derived from the Latin *immunis*, meaning *freedom from obligation*. In law and politics immunity signifies exemption from certain duties and exactions, such as military service, taxation, jury service, etc. The term is also used in connection with the susceptibility of human beings and animals to certain diseases. A person who has had measles, for instance, is supposed to be immune from other attacks of that disease. In this case the immunity is characterized as *acquired*. Arabs are said to be *naturally* immune from typhoid fever. Horses are immune from tuberculosis. The practice of inoculating persons to prevent their taking typhoid fever and other infections is for the purpose of bringing about acquired immunity.

IMPEACHMENT, the act of a legislative body by which an accusation is made against a public official for conduct unworthy of his office. Impeachment is no greater evidence of guilt than is an ordinary arrest on suspicion of complicity in crime; it is only an accusation. The accused has the right to a speedy trial to determine his innocence or guilt.

United States officers accused of improper acts in their official capacity are impeached by the United States House of Representa-

tives, by a majority vote the members declare the accusations, presented in legal form, are so serious as to demand investigation. After an official is impeached the Senate of the United States sits as a jury to try the case. Unless the President is the defendant, the Vice-President, in his capacity of President of the Senate, is the presiding officer. If the President of the United States is tried, as once occurred, the Chief Justice of the Supreme Court presides. The Vice-President is in such event disqualified because of his personal interest in the outcome of the trial, for in case the President should be found guilty and deprived of his office the Vice-President would succeed him.

The penalty imposed following a verdict of guilt concurred in by two-thirds of the Senate can extend no further than removal from office and disqualification to hold any other office of honor, profit or trust in the United States government. If the accusation against an official is of a criminal character, state or Federal officers may cause the arrest of the accused after his dismissal from office, and he may be regularly tried in state courts and punished by fine or imprisonment, or both.

The procedure in all the states follows the forms prescribed above. The state house of representatives votes impeachment and the senate tries the case, the lieutenant-governor usually presiding. In England the House of Commons impeaches, and the House of Lords sits in judgment.

There have been thirteen impeachments voted by the United States House of Representatives, as follows:

(1) **William Blount**, senator from Tennessee, was impeached on July 7, 1797, for conspiring to wage war with Spain in favor of Great Britain, and for attempting to stir up the Cherokee Indians against Spain and the United States. His trial lasted from December 17, 1798, to January 14, 1799, and resulted in his acquittal.

(2) **John Pickering** of New Hampshire, judge of the United States District Court, was impeached in 1803 for drunkenness and profanity on the bench, and for unlawful decisions. He was found guilty on all counts and removed from office.

(3) **Samuel Chase**, associate judge of the Supreme Court of the United States, was impeached in 1804 for injudicious actions and decisions in several political trials. He was acquitted in March, 1805.

(4) **James Peck**, of Missouri, judge of the United States District Court, was impeached

in 1830 for arbitrary conduct while trying a case. In January, 1831, he was acquitted.

(5) **West H. Humphreys**, of Tennessee, judge of the District Court of the United States, was impeached in 1862 for giving support to the secession movement and unlawfully acting as judge of the Confederate District Court. He was found guilty and removed from office.

(6) **Andrew Johnson**, President of the United States, was impeached in 1868 for violating the Tenure of Office Act, for corrupt use of the veto power, interference at elections and other high crimes and misdemeanors. His case came to trial on March 30 and ended on May 26. Thirty-five senators voted him guilty, nineteen declared for his acquittal. The vote lacked one of a sufficient number to convict, and he was therefore acquitted.

(7) **William W. Belknap**, Secretary of War of the United States, was impeached in 1876 for accepting bribes. He was acquitted.

(8) **Charles Swayne**, of Florida, judge of the District Court of the United States, was impeached in 1905 for misconduct in office. He was acquitted.

(9) **Robert W. Archibald**, associate judge of the United States Commerce Court, was impeached in 1912 for entering into corrupt alliances with coal-mine owners and railroad officials while in office. In January, 1913, he was found guilty and removed from office.

(10) **Alston G. Dayton** of West Virginia, judge of the United States District Court, was impeached in 1914. Proceedings were dropped without trial, March 15, 1915.

(11) **George W. English**, judge of the United States District Court of Illinois, was impeached in 1926, charged with mishandling bankruptcy cases; resigned.

(12) **Harold Louderback**, judge of the United States District Court of California, was impeached in 1933, charged with mishandling receivership cases; acquitted.

(13) **Halsted L. Ritter**, judge of the United States District Court for the Southern District of Florida, impeached in 1936, charged with accepting part of a fee in his court. He was found guilty, and automatically removed from office.

IMPERIALISM, a term applied in modern politics to the policy of a government which establishes wide spheres of influence far from its own shores. The leading exponent of this policy in recent years has been Great Britain. In the United States the acquisition of the Philippines and Porto Rico aroused the protest of many men, on the grounds that it was a step toward imperialism and was contrary to American precedent. This issue became an important one in the Presidential campaign of 1900, in which the so-called "anti-imperialists" played a conspicuous part, but the issue did not survive. It was the imperialistic tendency

of Germany, whose leaders sought world-wide extension of Teutonic influence, that occasioned the World War in 1914.

IMPRESSIONIST, *im presh'un ist*, **SCHOOL OF PAINTING**, the name given to a style of painting which originated with Edouard Manet in France about 1860. The impressionist painter seeks to render a first-hand "impression" of what he sees. He works with great rapidity, doing all his drawing with the brush and subordinating form to light and color. The leading impressionists of to-day are Claude Monet, Degas, Renoir, Sisley and Raffaelli, but they are little known to the masses of the people.

IMPRESSMENT OF SEAMEN, a term applied to the compulsory induction of men into naval service. This policy has not been put into practice by any of the powers since the War of 1812 (which see). The insistence of England on the right to board and search American vessels for seamen who owed allegiance to the British was one of the causes of that war.

IMPRISONMENT, FALSE. See FALSE IMPRISONMENT.

IMPRISONMENT FOR DEBT. To-day it seems absurd to put a man in jail because he cannot pay his debts, for he is thus de-

no person is now imprisoned for such a cause, unless in connection with the debt there is discovered fraud or false pretenses. England abolished general imprisonment for ordinary debts in 1869, France in 1867, Belgium in 1871, Ireland in 1872, and Switzerland in 1874. In the United States no sentence of this kind has been passed since 1849, though it was common in the republic's early years.

INCA, *in'ka*, the name of the ruling class of the Peruvian Indians at the time of the Spanish conquest. The government of the Incas was the most stable and the best on the continent, though in some respects the people were not so enlightened as the Aztecs and Mayas. The Peruvians were agricultural people, who irrigated their lands and built great granaries and fine roads to all parts of the empire. Gold was owned by them in abundance and was used in the decoration of their palaces and temples. The capital of the empire was at Cuzco, until just before the arrival of Pizarro, when Atahualpa, heir to the throne, moved it to Quito, to protect himself from a rebellion started by his brother (see ATAHUALPA). It was in 1523 that the Spaniards conquered the country, but it was forty years later be-



RUINS OF AN ANCIENT INCA CAPITAL

Believed to have been built before the time of Christ. Discovered in 1911.

prived of an opportunity to work and meet his obligations. However, for many years people were regularly sent to debtor's prisons. While yet legal in many countries,

fore the Indians were fully subdued. Some of their descendants, now civilized and respected, are living in Peru. See PIZARRO, FRANCISCO.

INCLINED PLANE, a mechanical device used to facilitate the hoisting of heavy weights. With the aid of it a workman may perform feats otherwise beyond his strength. For example, if a 200-pound barrel is to be lifted upon a dray three feet high the labor is lightened by the use of a plank, which may be twelve feet long, placed with one end on the ground and the other on the back of the wagon. The plank is what in physics is called an *inclined plane*. The mathematical law of the inclined plane is thus stated; the power multiplied by the length of the plane is equal to the weight of the article lifted multiplied by the height. In the example noted, with very little mathematics it can be seen that a very considerable load is taken from the weight; the man has only fifty pounds to hoist. See **MECHANICAL POWERS**.

INCOME TAX. Examine a tax receipt issued by any local governing body. It lists certain taxes for state, county, and city purposes, and for roads, schools, etc., but there is no apportionment for the government of the United States, which requires billions of dollars every year for its maintenance. From what sources does it derive its revenue?

It levies customs duties on goods shipped from other nations to be sold here; it puts a tax, called internal revenue, on each of many articles of home manufacture, so insignificant that in each case the amount paid is not realized as a tax upon one's resources. Sales of public lands also add a bit to the national income.

Necessity for Income Taxes. There arise periods of national emergency in which normal revenues of the government are insufficient to meet vastly increased expenditures. Only in such circumstances is there a demand upon the people for a direct cash contribution to the support of the nation. This is in the form of a tax on incomes. It may be a fixed per cent, applied to all alike, as 2 per cent of all cash receipts from every source, or it may be a progressive tax, levied in small per cent against those whose incomes are not large, but in increasing proportion as the amount of income increases. For example, the man who earns only \$4,000 may pay only a few dollars, while the man who receives a million dollars may be faced by a demand for more than half without jeopardizing his personal or family welfare.

Legislation. The Constitution of the

United States (Art. I, Sec. 9, Cl. 4) defines the manner in which these direct taxes may be imposed. In conformity with this authority, the Congress passed an income tax law in 1862, to raise war funds; it was in effect until 1871, then was repealed. In 1895 another income tax measure was passed, but as it did not conform to the basic law, it was declared unconstitutional by the Supreme Court. In 1909 an amendment to the Constitution was proposed, by which such a tax might be levied without the restrictions imposed by Article I; it ultimately received the sanction of three-fourths of the states, and became effective in February, 1913. (See Amendment XVI, p. 935.)

Within a few months the Congress passed a tariff act, and in it made provision for a tax on the net incomes of individuals, in accordance with the wide authorization of the Sixteenth Amendment. Its schedules of payment were not burdensome; single persons whose income did not exceed \$3,000 and heads of families in receipt of no more than \$4,000 were exempt from the tax. A tax of 2 per cent was levied upon all incomes in excess of these amounts, called a *normal tax*; in addition, on the theory that those in better financial circumstances should pay in accordance with their means, a second tax was imposed upon the first. This second was called a *surtax*, and it levied an additional 1 per cent on slightly larger incomes, with rates still higher for very large ones.

There was slight shifting of rates by new enactments year by year until 1918, at which time the tremendous cost of American participation in the World War demanded vastly increased revenue. Exemptions were lowered to \$1,000 and \$2,000, respectively; the normal tax was increased to 6 per cent on incomes below \$4,000, and to 12 per cent on those above that sum. Surtaxes were increased, and began to apply to \$5,000 incomes. Nearly every year after 1920 changes were made in the law, with rates usually lowered; but in 1933, in the midst of the national depression, when immense sums were appropriated to accomplished national recovery, rates were again increased. However, the war taxes were the highest the nation has yet imposed.

Many of the states have resorted to an income tax, in addition to the usual state taxes. They are modelled in the main on the Federal statutes, but rates are lower.

INCUBATOR, an apparatus for hatching eggs artificially. It is a cabinet on legs, containing as its essential parts drawers for the eggs and, at one end, a lamp connected by flues which convey warm air to the hatching chamber. It also has a device for ventilating and another for supplying the air with necessary moisture. Hens' eggs hatch in three weeks; the eggs of geese and ducks in four weeks. As soon as a chick hatches it naturally walks toward the light, which comes through a glass door at the front of the incubator. When it reaches the edge of the tray it tumbles into the compartment below, where proper provision is made for it.

The incubator should be placed in a room free from drafts and jars, and the temperature must be kept uniform. The trays should have a temperature of 102° the first two days and should be kept at 103° from then until the eggs are hatched. The eggs should be turned once each day until two days before time for them to hatch.

Hospitals use a specially built incubator for housing weak or prematurely-born babies, who would die if exposed to the air of an ordinary room.

INDEMNITY, in international law, remuneration exacted of one nation by another, to compensate for damage, insult or other wrong. In case of war it has been a time-honored custom for the conqueror to exact indemnity from the vanquished. Germany forced France to pay an indemnity of \$1,000,000,000 at the close of the Franco-German War. The United States is a notable exception to this rule, however. At the close of the Spanish-American War the victorious nation paid Spain the sum of \$20,000,000 for the colonies won from it, and the United States government voluntarily remitted to China half of its share in the indemnity arising from the Boxer Rebellion.

At the close of the World War in 1919 the allied nations found it to be a physical impossibility for Germany to pay in full for damage inflicted through more than four years of conflict; the bill for reparations was over seven billion dollars. A small portion was, with difficulty, paid. At a conference of Germany's creditors, at Lausanne, in 1932, it was agreed that the balance should be scaled down to about 700 million dollars. See **WORLD WAR**.

INDEPENDENCE, KAN., the county seat of Montgomery County, eighty-five miles southwest of Fort Scott, on the Verdigris River and on the Atchison, Topeka & Santa Fé and the Missouri Pacific railroads. The city is in the vicinity of numerous oil wells. There are cotton, flour, paper, sugar and planing mills, and the manufactures include garments, glass, vitrified brick, Portland cement, asphalt and other articles. The city is the headquarters of the Sinclair Prairie Pipe Line Company, and there are 113 acres in parks, with a zoo. There is also a Memorial Hall. Commission form of government is in force. Population, 1920, 11,920; in 1930, 12,782.

INDEPENDENCE, Mo., the county seat of Jackson County, nine miles east of Kansas City, on the Chicago & Alton, the Missouri Pacific and Kansas City Southern railroads. It is two and one-half miles from the Missouri River. The city is a popular residence suburb of Kansas City. It contains several manufactories and is the seat of the Saint Mary's Academy. The place was settled in 1827 and was chartered as a city in 1889. A new Federal building graced the city in 1911, and there is a hospital, a sanitarium and a public library. The city is a center for stock breeding, and fruit growing interests support a canning factory. Population, 1920, 11,686; in 1930, 15,296.

INDEPENDENCE DAY, the national holiday most dear to the hearts of the American people. It commemorates the adoption of the Declaration of Independence, July 4, 1776. On the fourth of each July this great event is celebrated throughout the Union with patriotic exercises of a varied nature. Formerly it was a day of noisy demonstrations, in which firecrackers and other explosives had a prominent part. The loss of life and property damage resulting from these celebrations led to a campaign for a "sane Fourth," and noise is no longer regarded an essential feature of the patriotic demonstrations. Congress has never enacted a law making Independence Day a holiday, but most of the states have passed such a law, and in every state it is celebrated as a legal holiday. It is an interesting fact that July 4, 1918, was officially celebrated in England, as in that year the two great Anglo-Saxon nations were united in the great war for democracy.

INDEPENDENCE HALL, a brick building in Chestnut Street, Philadelphia, erected between 1729 and 1734 as a meeting hall. Later it was turned into an office building, but during the Revolutionary War it was the meeting place of the Continental Congress. The Declaration of Independence was signed there, July 4, 1776. The building is now used as a museum of historical relics.

INDETERMINATE SENTENCE, the sentence of a criminal to an indefinite period of imprisonment. It is the conviction of many prison reform advocates that criminals should not be sent to prison for a definite number of years, but that they should be imprisoned only so long as is necessary to bring about a moral reformation. They would leave the duration of the term to competent authorities. A modified form of the indeterminate sentence is in force in various parts of the United States and Canada. This consists in sentencing a criminal to a term which shall be not longer than a specified number of years (usually fourteen), and not shorter than one year.

INDEX EXPURGATORIUS, a catalogue of books which the Roman Catholic Church prohibits its members from reading. The works of Calvin and Luther are absolutely forbidden. Books relating to magic and any book that would tend to weaken the faith of a Catholic are placed in the index. The first volume of an Index Expurgatorius was issued at Rome in 1607. The list was revised by Pope Leo XIII in 1895, and about 3,000 books were taken from it. The work of censoring is done by the *Congregation of the Index*, composed of theologians and cardinals.

The prohibitions upon reading books listed in the index are either total and absolute, without hope that the ban will ever be lifted, or are provisional and partial. In the absolutely prohibited list are all books written by the founders of other religions—denominated heresies—no matter on what subjects. That is why Calvin and Luther are not tolerated. The second group includes books the Church considers immoral; all publications on necromancy, or black art, magic, etc.; and books of whatever nature which contain statements prejudicial to the Roman Catholic religion, the prohibition to be in force until the offending passages are removed. All new books which it is suspected may be harmful are promptly passed upon.



INDIA, a great country in the southern part of Asia, wonderful in resources and fascinating in its atmosphere of mysticism and romance. India, which has been called the "brightest star in England's diadem," constitutes an empire of the greater British Empire, and economically is one of the most valuable of the British possessions. In size it is surpassed by Canada and Australia, but it has forty times as many inhabitants as the former and eighty times as many as the latter. See map, in article ASIA.

This magnificent Oriental empire is not a single nation, but a land of many nations. "It contains," writes one historian, "a bewildering variety of races, languages, alphabets; of religious sects and castes; of differing stages in civilization, from the lowest upward; of contrasting landscapes and regions; mountainous to a degree dwarfing the Alps, or flat and riverine like a larger Egypt, or forest-clad or jungle-covered, or ranging over high table-land or desert, or ocean-bathed." It is the cradle of one of the most ancient civilizations, of two of the world's great religions—Brahmanism and Buddhism—and of that ancient tongue, Sanskrit, upon which modern language study is based.

Location, Size, Population. The map of Asia shows on the southern coastline three irregular peninsulas—Arabia and French Indo-China jutting out from the two edges of the continent, and India about halfway between. India, however, comprises not merely the middle peninsula, but a considerable area belonging to the body of the continent. On the north its boundary adjoins that of Afghanistan and China; Baluchistan and Afghanistan form the western boundary of the continental portion, while the peninsula portion is bordered on the west by the Arabian Sea. The tip of the peninsula is washed by the Indian Ocean, and the western shore by the Bay of Bengal. Across the Bay of Bengal to the east lies Burma, once a part of British India but from 1936 a separate territory administered

directly by the Secretary of State for the Dominions. It is distinct from India, for which the Secretary of State for India is responsible to the British Parliament. Between India and Tibet are two *cis-Himalayan* independent states, Nepal and Bhutan.

The name British India is applied to that part of the Indian Federation as distinct from the States, administered by hereditary rulers who may or may not have acceded to the Act of Federation. British India comprises the presidencies of Madras, Bombay, and Bengal and the provinces of Assam, Bihar, Orissa, Central Provinces, United Provinces, Delhi Province, Punjab, Sind, North West Frontier Province, covering a total of 1,093,074 square miles, and having a population of over 280,000,000. The Indian States cover 709,555 square miles, and include a population of 85,000,000. Major states are Hyderabad, Mysore, Travancore, Indore, Rewa, Patiala, Nawanagar, Kashmir, Jodhpur, and Bikanir.

The statement of area and population becomes more impressive when India is compared with European states. Maps drawn to the same scale show that India is as large as all of Europe west of Russia; its population is nearly as great as that of the 25 countries in that area.

The People. One frequently hears the name Hindu used as an equivalent for native of India. As a matter of fact, in addition to a few scattering nationalities, there are four distinct racial groups in the empire. The Hindus are by far the most numerous. They are Aryans, of pure and mixed blood, and they inhabit particularly the region known as Hindustan, in the north-central part of the country. Then there are the Mohammedans, made up of the descendants of the Arabian invaders of India, and later converts; the Dravidians, a group of non-Aryan peoples living in peninsular India; and the wild hill tribes of interior India. These latter are thought to be the descendants of the first peoples who inhabited the country.

According to the most recent census, there are in India 264 spoken languages, though this figure includes certain related dialects belonging to the same language stock. It is probable that there are about 150 distinct languages current. Over 80,000,000 people use the Hindi dialect, and between 40,000,000 and 50,000,000, the Bengali. This latter

is of special interest as the form used by Rabindranath Tagore, the winner of the Nobel prize for literature in 1913. These dialects belong to the Indo-Germanic family of languages, but a variety of tongues of a different stock are found in the southern part of the peninsula. Chief among these is the Dravidian. The European residents in India use their own languages, but these have not as yet been learned by any considerable number of the native inhabitants.

There is much poverty and misery among the masses of this great country. The people have too long been under the sway of superstition and too closely bound down by the caste system to make much progress economically or educationally. Among the social customs which have tended to degrade them are infant marriages, the killing of unwelcome girl babies, cruelties practiced on widows and the sacrifice of human beings to the gods. While the British government does not as a rule interfere with native religious customs, such barbarous practices have been suppressed, and progress has been made in lessening the hardships of the lowest classes. As the division of the people into castes is a firm principle of Brahmanism, only by the institution of Christianity can the people be brought to throw off the cruel system that keeps the poor in a state of perpetual misery. Missionaries are permitted to work freely among the natives, and they are slowly bettering conditions.

Religion and Education. Brahmanism, the most important religion, is the faith of about 217,000,000 of the inhabitants. As has been suggested, its prevalence in India has been a serious obstacle to the enlightenment of the masses. Mohammedans are next in point of number, for there are about 66,000,000 followers of the Prophet. Of the other faiths, Buddhism, with 10,000,000 adherents, and animism (spirit-worship), with an equal number, are most important. There are also 3,000,000 sikhs, who worship one invisible god and form the majority of the inhabitants of the Punjab. Of the more than 3,000,000 Christians, about one-half are found in Madras Presidency.

In recent years much has been done to wipe out the reproach that only ten per cent of India's population is literate. Preparatory education is claiming more and more attention, and India's education bill is reaching stupendous budgetary propor-



Underwood & Underwood

AMRITSAR, INDIA

The scene is of the Sacred Lake, or "pool of immortality," with the Darbar Sahib, the Golden Temple of the Sikh faith on an islet, and the Clock Tower at the right.



Ewing Gallow

VIEWS IN INDIA

Above: The Victoria Memorial, Calcutta; a great museum of Indian history.

Below: The Sukkur Barrage, a vast irrigation project, officially opened in 1932 by the Viceroy of India.

tions. At the same time, it has been felt that merely to equip students with the training necessary to equip them to read and write would but serve to increase the mass of literate unemployed, and therefore more and more attention is being turned to training for vocations, fitting education to modern needs, teaching better village husbandry and similar arts.

There are universities, though not up to Western standards, at Calcutta, Bombay, Madras, Allahabad, Lucknow, and Lahore.

Cities. India is a country of rural population, and notwithstanding its huge population, the number of great cities is comparatively small. Of these the most important are Delhi, the capital; Madras and Bombay, the great commercial ports; Calcutta, Benares, Hyderabad, Lucknow, Rangoon and Lahore.

Surface and Drainage. The surface of India (not including Burma) is divided into three regions. These are the mountainous region of the Himalayas in the north; the great plain of the Ganges and the Indus, adjoining this region, and the table-land of Deccan, which forms the larger part of the peninsula, with its surrounding lowlands on the coast.

The mountainous region contains the loftiest peaks and passes of the Himalayas and descends by long, steep slopes to the Ganges valley. The valley of the Ganges and Brahmaputra is generally broad, low and quite level, the lower part of it being inundated during a portion of the year. The southern slope rises gradually to meet the plateau of Deccan. Between the valley of the Ganges and that of the Indus there is a height of land, which consists of a low swell, extending in an irregular line from the Gulf of Cutch northeastward to the mountains.

The table-land of Deccan occupies the space between two coast ranges of mountains, known, respectively, as the Eastern Ghats and the Western Ghats, and is bounded on the north by the Vindhya Mountains. Its altitude varies from 1,400 to 3,000 feet, and on its surface are found numerous conical peaks, that rise from 1,000 to 2,000 feet above the table-land. This table-land is divided by the Nerbudda and Kistna rivers into north and south sections. The general slope of the region is toward the east, and most of the surface is fertile soil.

The great rivers of India are the Indus, with its tributaries, the Sutlej and the Chenab, in the northwest; the Ganges, with its tributaries, the Jumna and the Brahmaputra; and the Godavari, the Kistna and the Nerbudda in the central and southern part of the peninsula. Of these, only the Indus empties into the Arabian Sea. The Ganges is the most important commercially.

Climate. The climate of India has a wide range, owing to the extent of latitude and the various elevations of the different portions of the country. In the south and central portions and along the coast the temperature is high throughout the year, but in the elevated regions in the interior, as the highest portions of the Deccan, and especially among the mountains in the north, the climate is salubrious, so these regions afford relief to Europeans and others, who dwell in the lowlands during the cooler season and retire to the mountains for the hot period. The rainfall is extremely varied. To the north, along the Bay of Bengal, in the province of Assam, it is from 300 to 400 inches a year, and in extraordinary seasons it has been known to exceed this amount. This region receives the heaviest rainfall in the world. In the extreme northwestern portion of the country the rainfall is light and there is a region, extending northward from the Gulf of Cutch for nearly 500 miles, in which rain scarcely ever falls. The annual precipitation at Calcutta is about sixty-six inches, at Bombay, seventy-five inches and at Madras, fifty-two inches. The arid regions, which famine has often blighted, are in the upper regions of Bengal provinces, in the north-central portion of the country.

Mineral Resources. Here India is fortunate, extensive fields of coal, copper, iron and lead existing, while in the south gold is being mined at fair profit. Silver is abundant, and can be further developed. Manganese is exported in considerable bulk. Bauxite deposits are frequently disclosed by prospectors.

There was a time many centuries ago when India was famed throughout the known world for its diamonds and rubies; the fabulous jewels of native rulers of today bear testimony to this.

Agriculture. The country has a great variety of vegetation. The slopes of the Himalayas below the tree line are covered

with timber, valuable for many purposes. The lowlands, especially around the mouths of the great rivers, contain extensive swamps filled with rank vegetation and harboring many fierce wild animals. Trees of various species are scattered throughout the country, though, except on the mountain sides, there are no extensive forests. The most useful trees are blackwood, sandal, teak, various kinds of cedar and some species of palm and oak. Bamboo is also a valuable product.

Agriculture is the leading occupation of the country and engages the attention of a large part of the inhabitants. The people who till the land live in villages, which may consist of a few houses or of several thousand inhabitants. The land is near the village, and each occupant tills a comparatively small area. The native inhabitants are opposed to the introduction of agricultural machinery and of implements such as are used in Europe and the United States; consequently, the methods employed are primitive and the results are far less than they might be with better methods of tillage. Nevertheless, the soil is fertile, and where supplied with sufficient moisture it yields good crops. In some sections of the interior irrigation is regularly practiced, and in others it is used when the rainfall is less than the average. The government has, with the expenditure of large sums, constructed reservoirs in these localities, for the purpose of reserving the surplus of water to be used as needed. The most important crops are rice, wheat and other cereals, cotton, sugar, indigo, opium, jute, tobacco and tea. The northwest provinces raise the largest quantity of wheat, and cotton is grown most extensively in the central portion of the peninsula, while sugar cane is most extensively cultivated in Bengal and the United Provinces. Indigo is an important product in the lowlands of Bengal, tea is cultivated in Assam and Lower Bengal, and opium is restricted to the region around Benares and is a government monopoly. Oil seeds also constitute an important crop in several localities.

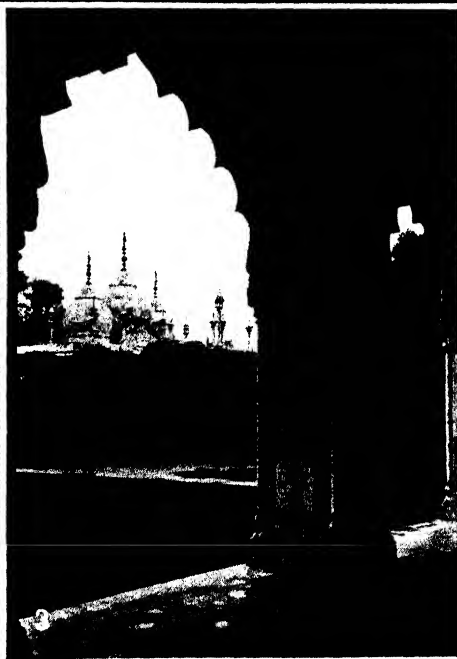
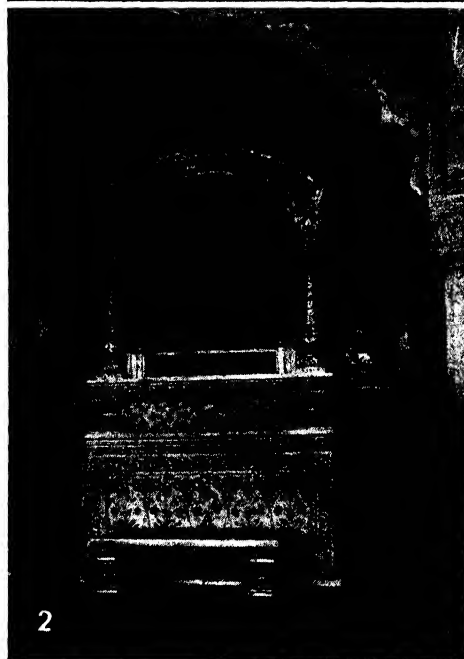
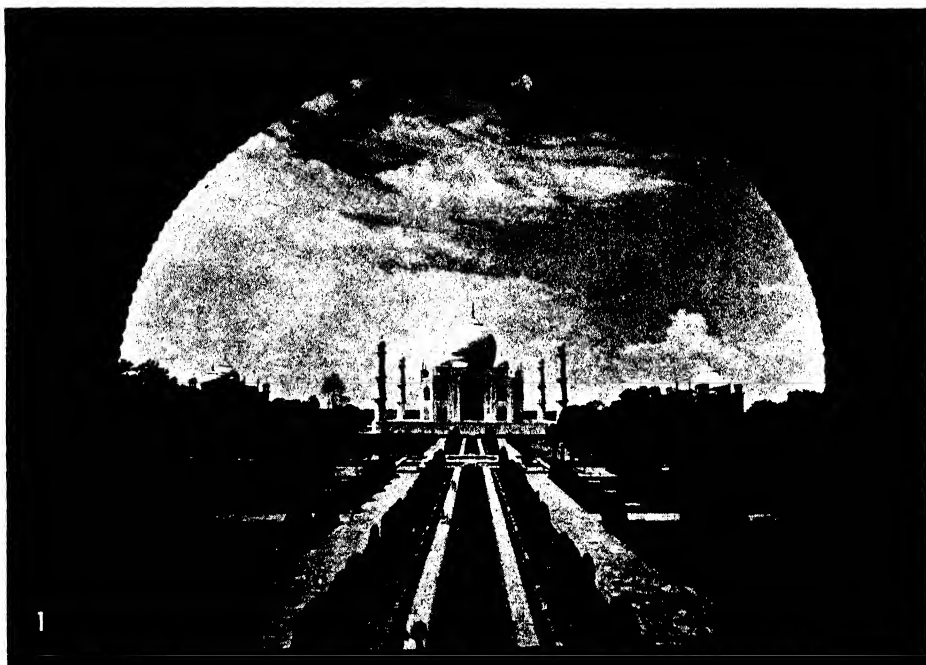
Manufactures. Ever since India has been known to civilization, the native inhabitants have been famed for their skill in the manufacture of textile fabrics remarkable for their fineness and delicacy. Many of these are made wholly by hand labor

and with the simplest of implements. Among them are the products of the province of Kashmir. Rugs and carpets peculiar to this country are also produced in large numbers. Within recent years, however, modern machinery and factories have been introduced for the manufacture of cotton goods, and this has resulted in the production of large quantities of a coarse, cheap fabric, which has an extensive sale and forms an important article of export. Other products peculiar to India are furniture and articles of beautifully carved woodwork. There is also some metal work in gold and silver of similar nature. Because of the skill used in their manufacture and their beauty of appearance, all articles of this sort command a high price in European markets. Manufactures of jute and hemp are also important, and the extension of commerce with Western countries has increased the output of woollens, paper, flour and lumber, while in some localities there are breweries and in others indigo and sugar factories.

Commerce. The commerce of India is among the most important of all Asiatic countries. The principal exports are cotton, rice, jute, opium, tea, coffee, indigo, raw wool, wheat, oils, silks, chemicals, drugs, textiles and other articles peculiar to the manufactures of the country. The imports consist of foodstuffs, machinery and manufactured articles of great variety, especially those that can be obtained from Western markets more conveniently and cheaply than they can be produced in the country. A great part of the trade is with Great Britain. Germany, France, the United States and Egypt are also important countries in the foreign commerce; Japan is the most important of the Asiatic nations in this respect.

Transportation. Since the British advent, communications have been opened up on an extensive scale, river services and the railways operating on a large scale, and with the coming of motor cars there has been an even more marked progress; bus services brings remote villages within access to the cities, while lorries ply busily between village marts and the centres where produce is sold for internal distribution and for export.

Government. After the Indian mutiny of 1857, the British Parliament took over from



GEMS OF INDIAN ARCHITECTURE.

The Taj Mahal, Agra, India, as seen through arch of main portal.
Built by Shah Jehan as a memorial to his favorite wife, 1629-1650.

The Diwan-i-Am (Hall of Public Audience)
in Palace at Delhi, India.

The Pearl Mosque, India, as seen through
arch of Diwan-i-Khasa (Hall of
Private Audience.)



INTERESTING PHASES OF INDIAN LIFE.

- 1—High caste Indian girls, Calcutta, India.
- 2—Policemen at school in Moga, India.
- 3—An Indian ox-cart conveys an entire family.
- 4—An American tractor building roads in India.

the East India Company the administration of the country, and India was administered by governors of presidencies and lieutenant-governors of provinces, under a governor-general and viceroy, each administrator being assisted by a council. On Queen Victoria's accession, a declaration was made that it was Britain's policy in India to govern the country with the ultimate end in view that Indians would themselves take an increasing share in its control, according to their growing fitness to do so. This policy has been steadily maintained, and the first steps lay in village government by *panchayets*. Later Indians were admitted to membership on district and municipal boards, and later still they were nominated to the governors' councils.

Prior to the World War, Indians were elected to provincial and the central legislature in larger numbers, and as a token of Britain's esteem for India's contribution to the war it was decided still further to enlarge their scope of self-government. Accordingly, the late Sir Edwin Samuel Montagu, then Secretary of State for India, and Lord Chelmsford, then Viceroy and governor-general, after consulting various opinion, devised a larger measure of self-government which Parliament sanctioned in 1919, with the promise of revision in ten years. This measure of self-government broke down largely because it carried no responsibility.

In 1928 Sir John Simon was sent to India at the head of a Parliamentary commission to explore the ground of further and improved system of self-government, and the proposals were eventually embodied in the Indian Bill of 1935. This provided:

Provinces. Each Indian province is to be autonomous and to have its own elected legislature. In Madras there will be 215 elected members; Bombay, 175; Bengal, 250; United Provinces, 228; the Punjab, 175; Bihar, 152; the Central Provinces, 112; Assam, 108; the North West Frontier Province, 50; Sind, 60; Orissa, 60. There will be upper houses, to give proprietary interests a voice in provincial affairs, in Bengal, the United Provinces, and Bihar.

Federation. There will be a federal legislature consisting of representatives elected from British India and of members nominated by those States which accede to federation. This legislature will be bi-cameral.

The lower chamber (House of Assembly) comprises 375 members, of which 125 represent the States. The upper chamber (Council of State) comprises 260 members, 100 of whom are nominated by the States and ten in the nomination of the governor-general to redress communal inequalities. Both chambers have almost identical powers, save that the lower chamber has the right to initiate money bills and votes of supply.

History. The early history of India is obscurely written in the myths of Sanskrit literature. The first fact of any certainty is that about the year 2000 B.C., or even earlier, an Aryan people of comparatively high civilization descended from the mountain regions of the northwest into the plains of India and subdued the original inhabitants there. The expedition of Alexander the Great to the Indus gives a momentary glimpse of that part of India, but between his invasion and the Mohammedan conquest there is little authentic history. In the third century B. C. Buddhism was established throughout India, but it afterwards gave way almost entirely to Brahmanism. In A. D. 1001 the sultan Mahmud of Ghazni invaded India, and the Mohammedan power was gradually established throughout the country. Late in the fourteenth century Timur, or Tamerlane, led a great Mongol invasion and proclaimed himself emperor of India. He shortly retired, however, to Central Asia, and it was not until 1526 that the Mogul Empire in India was really founded under Sultan Baber, a descendant of Tamerlane. The Mogul Empire began to decline after the death of Aurungzebe in 1707, and about thirty years later Nadir Shah of Persia invaded India and sacked Delhi. Throughout the empire, which had been firmly held together under the great Moguls, the viceroys under the weaker emperors began to declare themselves independent.

The breaking up of this strong empire offered a good opening to European nations, and the Venetians, Portuguese and Dutch, who had been visiting India from the fifteenth century, began to make their influence strongly felt. The English East India Company had formed commercial settlements in India as early as 1613, and from the first there was a rivalry between them and the French settlements, which had also been established early in the seventeenth century. The first real conflict with the French did

not take place, however, until 1746, when the English lost Madras, which was, however, restored to them by the Treaty of Aix-la-Chapelle.

From the time of Clive the English held the dominant influence in India, and 1757, the year in which Clive defeated the Moguls at Plassy, is the date of the foundation of the British Empire in India. The strong government set up by Clive was preserved under Warren Hastings, who, by the appointment of English officers to collect the revenues and preside in the courts, laid the foundations of the present system of British administration in India. In 1774 Hastings was made first governor-general of India. In 1778 the intrigues of the Bombay government led to the first war with the Mahrattas, and in this the British arms were saved from disgrace only by the achievements of the Bengal army which Hastings sent to the aid of the Bombay presidency.

In 1838 the first Afghan War was undertaken, the object of which was to set up a native province as a northern guard to British India. The war terminated in disaster for the British, but later in the same year a second campaign was undertaken, which proved more successful. In 1857, shortly after the appointment of Canning to the governor-generalship, the Sepoy Mutiny occurred. Several outbreaks among the Sepoys took place during March, 1857, but the most formidable revolt was at Meerut, on May 10, when the Sepoys massacred the Europeans. They then fled to Delhi, where they were immediately joined by the native garrison, and another massacre took place. The revolt spread rapidly in the northwestern provinces, from Oudh down to Lower Bengal. In the Punjab the prompt measures of the government officials in disarming the Sepoys prevented an outbreak, and the Sikh population continued steadily loyal. Wherever the mutiny broke out, it was attended with savage excesses.

At Cawnpore the revolting Sepoys were headed by Nana Sahib, the heir of the last peshwa of the Mahrattas. The Europeans, after a heroic attempt to defend themselves capitulated on the sworn promise of Nana Sahib that he would allow them to retire unmolested; but as they were embarking, they were set upon and indiscriminately massacred. The women and children were carried back to Cawnpore and kept until

July 15, when they were all put to death on the approach of Havelock's army. Havelock took Cawnpore by storm on the following day. At Lucknow Sir Henry Lawrence was besieged in the residency and, despite Lawrence's death, the place was held until Havelock relieved it in September. He himself was in turn besieged and was with difficulty relieved by Sir Colin Campbell. By May, 1858, order had been partially restored, and the mutiny was at an end.

In 1858, as a result of this mutiny, the sovereignty of India and the powers of government hitherto vested in the East India Company were transferred to the British Crown. The Empire was consolidated by the viceroys who followed, and in 1877 the queen of England was proclaimed empress of India. In the following year occurred an Afghan war with Shere Ali, but peace was finally established, and Abdurrahman Khan was placed on the Afghan throne by British arms. In 1897 another serious outbreak on the Afghan frontier occurred, but the British at length were completely victorious. A severe famine in 1899 affected millions of people throughout the country, and there were some attempted revolts, but on the whole the country proved loyal.

The determination of England to treat Tibet as an independent power, which was to remain neutral territory between the dominions of Russia and Great Britain, led to constant friction with Russia. The government of India in 1903 invited Tibet to send representatives to a conference for the settlement of various misunderstandings, and when the request was refused an expedition under Colonel Younghusband was dispatched into the country. After a difficult march and some severe fighting, the force reached and took Lhasa. The grand lama fled, a new ruler was appointed who was more favorable to British interests, and a treaty was made which secured important commercial concessions to the English. Russia objected on the ground that England was establishing a virtual protectorate over Tibet, but the English government steadily maintained that its object was to secure the commercial rights of India and not to annex Tibet.

Of late years relations between the people of India and the British have been on the whole very cordial, and there was a striking demonstration of loyalty to Great

Britain during the World War. India furnished thousands of fighting men for the allied armies, as well as artisans and other laborers, and contributed vast quantities of bridge material, provisions and other supplies for the campaign in Mesopotamia. Over half of the river vessels used in that campaign were supplied by India. In 1917 an Indian war loan of £32,000,000 (\$160,000,000) was subscribed. There was a noticeable increase in national consciousness in the empire as the war progressed, and it was recognition of this spirit, as well as the strengthening of democratic principles resulting from the war, that inspired the plan to confer home rule on India.

The out-standing figure in this movement is an ascetic Hindu monk, Mohandas Ghandi. He urges a policy of non-resistance, of non-cooperation with the government in education, industry and politics. His influence is very great, and he has a large following. A radical minority declared for independence, but lack of practical organization has rendered their efforts ineffective.

Related Articles. Consult the following titles for additional information:

GEOGRAPHY

Agra	Cawnpore	Lahore
Allahabad	Deccan	Lucknow
Arabian Sea	Delhi	Madras
Bangalore	Ganges	Mandalay
Baroda	Golconda	Mysore
Benares	Himalaya	Nepal
Bengal	Hyderabad	Nerbudda
Bengal, Bay of	Indian Ocean	Punjab
Bombay	Indus	Rajputana
Brahmaputra	Irrawadi	Rangoon
Burma	Jaipur	Serinagar
Calcutta	Laccadives	Sutlej

HISTORY

Black Hole of Calcutta	Sepoy Rebellion
Clive, Robert	Suttee
East India Company	Tibet
Hastings, Warren	Timur

RELIGION

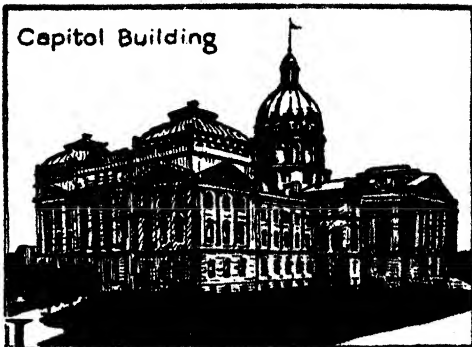
Brahmanism	Caste
Buddhism	Mohammedanism

UNCLASSIFIED

Aryan	Fakirs
Bengali	Sikhs
Durbar	Taj Mahal

INDIA INK, an absolutely black pigment. The usual basis used in its manufacture is a finely-divided carbon, mixed with a glue or gum which holds it in suspension when liquified with water. The ancient Chinese made a black ink from soot obtained from oil of sesame, and another kind has been produced from the black secretion of the cuttlefish. India ink is used chiefly in making pen-and-ink line drawings of the sort used in book illustration.

Capitol Building



INDIANA, the thirty-seventh state in size in the American Union and the eleventh in population. It was the second of the five states which were formed from the Northwest Territory, the first being Ohio, which lies east of it. Kentucky is south, Illinois is west, and Michigan and Lake Michigan are north. The land area of Indiana is 36,045 square miles. The population in 1920 was 2,930,390. By the Federal census of 1930 the state had 3,238,503 inhabitants, or 89.8 to the square mile.

For some one outstanding thing most states are best known in sister commonwealths. Possibly Indiana's greatest fame lies in the long list of men who have made voluminous, and in some cases, notable, contributions to American literature. Surely among America's most loved poets is James Whitcomb Riley. Second only to him in point of worth most critics would place General Lew Wallace. Below them is a numerous group of writers whose work has attracted wide attention; in the list may be included Edward Eggleston, Meredith Nicholson, Booth Tarkington, George Barr McCutcheon, George Ade and Maurice Thompson. John T. McCutcheon became one of America's greatest cartoonists.

Education. The state has an excellent school system, based upon the township plan. The township is the smallest unit for public school administration, and the schools of that unit are placed in the hands of a trustee who is elected by the voters of the township. A unique feature of the school system is an occasional meeting of all the teachers in each township during the school year. This partakes of the nature of a teachers' institute. The public school expenditures yearly exceed \$70,000,000. Indiana University at Bloomington is at the head of the school system. Purdue University, with the state

agricultural and technical school, at Lafayette, and Indiana State Teachers College, at Terre Haute, are also parts of the public school system. Other important educational institutions are De Pauw University, Greencastle; Franklin College, Franklin; Huntington College, Huntington; Vincennes University, Vincennes; Rose Polytechnic Institute, Terre Haute; Valparaiso University, Valparaiso; Wabash College, Crawfordsville; Earlham College, Richmond; Butler College, Indianapolis; Taylor University, Upland; Evansville College, Evansville; Concordia College, Fort Wayne: mostly co-educational.

One of the state's greatest schools is the University of Notre Dame, at Notre Dame, for men; another Catholic institution of note is Saint Mary's of the Woods at Terre Haute, for women.

Surface and Drainage. Indiana is in the prairie region, and its surface is similar to that of Illinois. The highest land in the state is in the eastern part, Randolph County, where elevations up to 1,285 feet are found. In the northwestern part the elevation is about 600 feet. Bordering on Lake Michigan is a chain of sand hills or dunes which have been formed by wind. These hills are of great interest to geologists and are frequently visited by geological parties; the section has been made a state park, to insure their preservation. There are many low marshes near the lake, some of which have been drained and transformed into farms for growing vegetables. Along a line extending from the northeastern corner of the state to Logansport is a range of low sand hills, containing a number of depressions in which shallow lakes are found. Several of these lakes have become favorite summer resorts.

South of this region and extending to a line running across the state just south of Indianapolis to the Wabash River is a broad, level plain, with scarcely any variation in altitude, but this region blends into a rolling prairie north of the Wabash. The southern part of the state has a decidedly broken and uneven surface. This region includes the counties bordering on the Ohio and those adjoining them on the north. The region contains no high hills or mountains, but in some sections there are extensive limestone formations, which have been washed by underground streams. In some places the streams have disappeared, leaving sink holes and caverns.

Some of these caverns contain formations of rare beauty. The most noted is Wyandotte Cave, which yearly attracts many visitors. This remarkable formation, about twenty-three miles long, is second in size to Mammoth Cave.

A small portion of the northeastern part of the state is drained by the Maumee into Lake Erie; the Kankakee, in the northwest, drains a large area into the Illinois River and thence to the Mississippi. The southeastern counties are drained by the Whitewater, which enters the Ohio just across the eastern boundary. The remainder of the state is drained by the Wabash and its tributaries. The Wabash traverses the state from the northeast to the southwest and is joined by the White, its principal tributary, which, with its west fork and other tributaries, drains a large part of the south central region. The streams flowing into the Ohio from the southern counties are short and of little importance.

Climate. The extent of latitude covered by Indiana causes a difference of about nine degrees between the mean temperature of the northern and the southern tiers of counties. The summers are usually warm, and during July and August many hot days are experienced. Owing to the sweep of the north winds the winters, especially in the northern part, are often severe, having from seventy-five to ninety days of freezing weather and sometimes as much as forty inches of snow. In the southern half the winters are short and mild, and snowfall here seldom exceeds fifteen inches. The rainfall varies from thirty to fifty inches and is heavier in the south than in the north, the average for the state being about forty-three inches; but the periods of precipitation are unevenly distributed. July and August are liable to be dry months.

Mineral Resources. The coal measures of Indiana are located in the southwestern part of the state, and have an area of 6,500 square miles. Many of the mines yield an excellent quality of bituminous coal; the output is steadily increasing, and now exceeds \$19,000,000 in value yearly. The petroleum industry is also important, but since the opening of the Illinois fields oil production has declined. The state ranks first in the production of lime and second in the production of Portland cement. The output of building stone is also of great value, Bedford limestone having acquired a wide reputation. Brick and tile clays are widely distributed

over the state and give rise to important industries. The total mineral output exceeds \$42,000,000 in value annually.

Agriculture. Agriculture is the leading industry of Indiana, and ninety-five per cent of the tillable land is under cultivation. Hardwood forests are scattered over the state, though, except in the southern counties, they now cover only small areas. With scarcely an exceptional spot, the soil is fertile. The chief crops, in the order of importance, are corn, wheat, hay and oats. Over 158,000,000 bushels of corn are raised, wheat, 45,000,000 bushels; oats, 52,000,000 bushels. The counties near Chicago are well suited to truck farming, and large sections in this region are devoted to it. Stock raising also receives attention throughout the state. There are extensive areas of valuable pasturage, and large numbers of horses, cattle, sheep and swine are raised. The average annual wool clip yields over 5,000,000 pounds of wool from 700,000 sheep. Fruit is quite generally grown throughout the state, and in the southern half potatoes, plums, pears and small fruits are raised in quite large quantities.

Manufactures. Hammond, East Chicago, Indiana Harbor and Gary are important manufacturing centers near Chicago; they form practically a continuous manufacturing district around the southern end of Lake Michigan. The first has extensive meat packing houses and the others are noted for the manufacture of iron and steel and their products. Gary has the largest steel works west of Pittsburgh. There are numerous factories for the manufacture of agricultural implements, automobiles and other wares. At South Bend is the great Studebaker automobile factory. A considerable quantity of coke is manufactured, and the manufacture of cotton, woolen and knit goods forms an important and growing industry. The manufacture of glass, which was formerly one of the leading industries, has declined, owing to the failure of the supply of natural gas, and some factories have removed to other localities.

Transportation. Indiana is traversed in all directions by a large number of trunk lines of railway, which have their western centers in Chicago and Saint Louis and their eastern centers in New York, Philadelphia, Baltimore and other large cities. With the exception of the two southern tiers of counties, all portions of the state are well supplied with

Items of Interest on Indiana

In the southern and south-central part are many mineral springs, which have become famous health and pleasure resorts, especially French Lick and West Baden.

Among song birds are the cardinals, scarlet tanagers, meadow larks, catbirds, wood thrushes, robins, bluebirds, red-headed woodpecker, and several species of warblers.

The soil of the greater part of the state consists of loose loam, exceedingly fertile, especially in the Wabash Valley; the least fertile part is the sandy region just south of Lake Michigan.

Indiana ranks thirteenth among the states in the value of agricultural products.

Indiana ranks third as a manufacturer of steel and steel products and glass, fourth in furniture, sixth in agricultural implements, and seventh in packing-house products.

The mineral resources seem to be declining; the output of petroleum, natural gas, and coal was formerly greater than it is now, but the state still ranks seventh in natural gas and sixth in coal. The state ranks second as a producer of Portland cement and also furnishes annual supplies of building stone and fine clays, sandstone and limestone. The average annual value of these products is over \$10,000,000.

The center of population of the United States, since 1930, is close to Linton, Greene County.

Questions on Indiana

What is the character of the surface?

In what direction is the general flow of drainage?

How many varieties of flowering plants are found in the state?

What is the leading industry?

What causes are responsible for the growth of Indiana's manufacturing industries?

What are the most important manufactured products?

How does the state rank in the manufacture of carriages and wagons?

INDIANA

THE HOOSIER STATE



COAL MINE



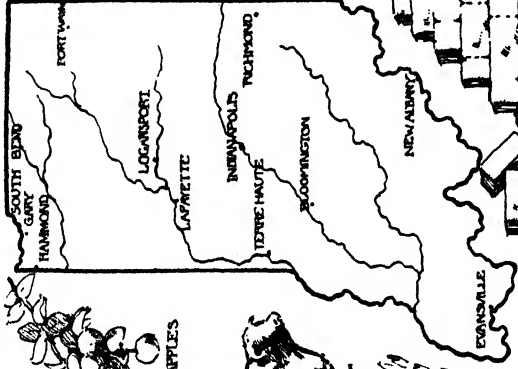
CORN



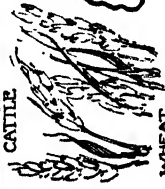
PEARS



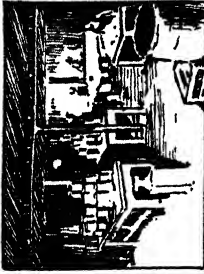
APPLES



CATTLE



WHEAT



PACKING HOUSE



FARM SCENE



OATS



PEACHES

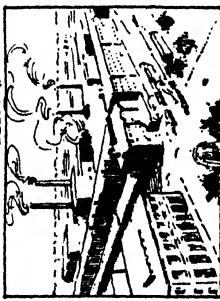
CHERRIES



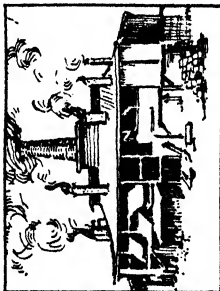
HOGS



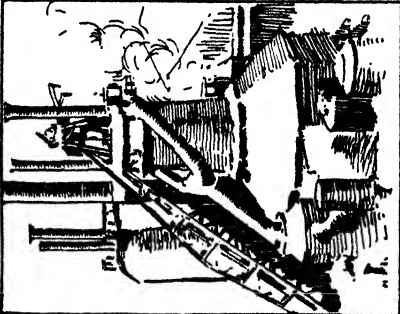
BRICKYARD



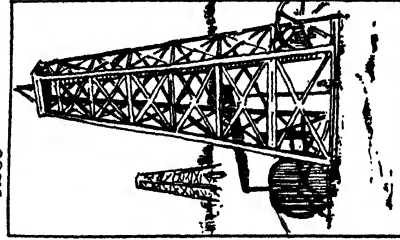
AUTOMOBILE FACTORY



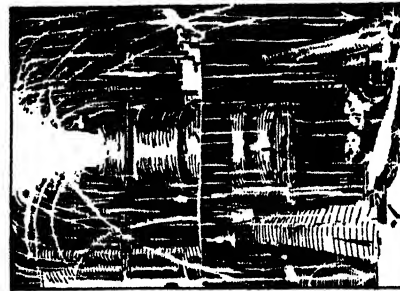
GLASS FACTORY



BLAST FURNACE



PETROLEUM



CEMENT CONCRETE

railway facilities, but owing to the unevenness of the land in the region named only a few lines have been constructed there. The entire railroad mileage of the state exceeds 8,000 miles; there are also 2,000 miles of electric lines. Motor buses have given both steam and electric railways keen competition, but all together give Indiana adequate and convenient transportation service. A state highway system has been highly developed to a total of over 7,000 miles of improved roads. The Ohio is the only navigable river which is of value to the state as a means of transportation.

Government. The legislative department consists of a senate of fifty members, elected for four years, and a house of representatives of one hundred members, elected for two years. The legislature meets every other year. The executive department consists of the governor and the lieutenant-governor, each elected for four years, a secretary of state, a treasurer, an auditor, and a superintendent of public instruction, elected for two years. The judicial department consists of the supreme court, an appellate court and circuit courts. In addition to these there are superior courts in the large cities.

Institutions. The hospitals for the insane are located at Logansport, Richmond, North Madison, Indianapolis and Evansville; the state soldiers' home is at Lafayette; the soldiers' and sailors' orphans' home is at Knightstown; schools for the deaf, dumb and blind are at Indianapolis; the state reformatory is at Pendleton; the penitentiary is at Michigan City; the women's prison is at Indianapolis; a village for epileptics is at New Castle; a tuberculosis hospital is at Rockville, and there is a state farm at Putnamville.

Cities. Indiana has thirty-four cities each of which in 1930 had more than 10,000 inhabitants. The capital and largest city is Indianapolis; the next five cities in order of size are Fort Wayne, South Bend, Evansville, Gary and Terre Haute.

History. The first permanent white settlement in Indiana was made at Vincennes (1734) by emigrants from Canada. But as early as 1680 La Salle had made explorations in the Ohio and Wabash valleys, and early in the eighteenth century trading and military posts, missions and settlements had been made at several points. The territory constituted a part of New France until 1763,

when it was ceded to England. By the treaty of 1783 it became a part of the United States, having been conquered during the Revolution by a band of frontiersmen under George Rogers Clark. Indiana became a territory in 1800; at that time it included Michigan, Illinois and Wisconsin. In 1809 it was reduced to its present size. In 1811 the Indians, who had been giving constant trouble, were defeated by General Harrison at the Battle of Tippecanoe. Indiana became a state December 11, 1816, with a constitution forbidding slavery. After a period of financial weakness and political confusion, the state steadily prospered; and it has taken advanced steps toward the solution of political and industrial problems, such as the establishment of an industrial arbitration tribunal and an anti-trust law. It has been doubtful in politics for many years, and has been the scene of memorable political battles. It has given to the United States one President, General Benjamin Harrison, and four Vice-Presidents—Schuyler Colfax, Thomas A. Hendricks, Charles W. Fairbanks and Thomas R. Marshall. In 1908 a local option law was passed to regulate the liquor business, and ten years later statewide prohibition was adopted, in advance of national action.

Indiana has made advances in progressive legislation. The departments of the state government have been reorganized; laws have been passed regulating motor vehicles; licensing insurance agents; allotting state funds to weak school districts; limiting the power of courts issuing injunctions, and providing for old age pensions. The banking laws have been codified. The redemption rate on real estate sold for taxes has been fixed by statute, and the general tax laws revised. Executive functions are centralized in the hands of the governor.

Related Articles. Consult the following titles for additional information:

CITIES

Anderson	Goshen	Mishawaka
Bedford	Hammond	Muncie
Bloomington	Huntington	New Albany
Brazil	Indianapolis	New Castle
Columbus	Jeffersonville	Peru
Crawfordsville	Kokomo	Richmond
Elkhart	Lafayette	Shelbyville
Elwood	Laporte	South Bend
Evansville	Logansport	Terre Haute
Fort Wayne	Marion	Vincennes
Frankfort	Michigan City	Wabash
Gary		

GENERAL

Clark, George Rogers	Tippecanoe, Battle of
Dune	Wabash River
Harrison, William	White River
Henry	Wyandotte Cave

INDIANAPOLIS, IND., the county seat of Marion County, the capital of the state and its the largest city, is situated 111 miles northwest of Cincinnati and 183 miles southeast of Chicago on the Baltimore & Ohio, the Pennsylvania, the Illinois Central and thirteen other railroads. A belt railroad system greatly facilitates the transfer of commodities. There are numerous bus and inter-urban lines, a municipal airport and several landing fields. The National and the Lincoln highways pass through this metropolis.

The city maintains more than 1,200 industries, including meat packing, foundry and machine shop products, clothing, automobiles, printing and publishing, bakery goods, canned goods, repair shops, electrical machinery, paints and varnishes, metal products, lumber products and creameries.

Important buildings include the Indiana World War Memorial, the chamber of commerce building, the Circle Tower, the Guaranty Building, the Scottish Rite Cathedral, the public library, the state capitol, and the National Bank Building, the tallest in the city. The Indiana Medical Center occupies 125 acres east of White River. The United States Veterans' Hospital, with nurses' home, administration and ward buildings is situated on a beautiful site overlooking parks, golf courses and driveways.

Among the educational institutions mention should be made of Butler University, Indiana Central College, extension medical and dental schools of Indiana University, John Herron Art Institute, Indiana Law School and the Irvington School of Music. The main building of the public library is noted as one of the most perfect examples of Grecian architecture. The children's museum with 25,000 curios on display is a highly prized institution.

West of the city limits are the greatest motor speedways in the United States; more than 150,000 visitors, some coming from foreign lands, attend the annual races. The Benjamin Harrison army post lies to the north of the city.

Indianapolis is known as a city of homes, with wide shady streets and beautiful lawns. The city's business streets are Meridian, Maryland, Market, Delaware, Pennsylvania, Ohio, Illinois and Washington streets; and the finest residences are on Meridian and Pennsylvania streets and on Washington, Maple Road and Fall Creek Boulevards.

Indianapolis was settled in 1819; its name was selected in 1821 when it was laid out by Alexander Ralston according to plans used by Major L'Enfant when these two were associated in planning the national capital. The scheme combines the "spider web" of Versailles and Thomas Jefferson's plan for regular squares. The Soldiers and Sailors Monument standing on a circle forms a hub for the principal streets and avenues of the city.

The state government moved to the new location in 1824. The town government was set up in 1832 and the city was chartered in 1847, with council and mayor as legislative and administrative heads. The revised city government plan was put into operation in 1891. Population, 1930, 364,161.

INDIAN ARCHITECTURE, the architecture developed by the people of India. Several styles are represented, including the Buddhist, the Jaina, the Dravidian, or style of Southern India, the Chalukyan and the Modern Hindu, or Indian Saracenic. All these styles possess certain common traits, among which are minute and profuse ornament, executed in laborious carving; the use of many horizontal lines and bands, giving a stratified appearance; a repetition of the same motif, and a neglect of structural requirements. Among the principal forms of Buddhist architecture, which prevailed between the third and seventh centuries A. D., are the following: First, the *topes*, *stupas*, or towers, built to mark some sacred spot, and the *dogobas*, constructions of a similar nature, containing relics of Buddha or Buddhist saints; and second, the rock-cut *chaitya halls*, or churches, and the *viharas*, or monasteries.

The Jaina style, most highly developed in the eleventh century, is an outgrowth or corruption of the pure Buddhist. The temples in this style consist of a small sanctuary, surmounted by a lofty and nearly solid tower, the whole standing in a court surrounded by small cells, each surmounted by a smaller dome. The Dravidian style, that of the peoples of Southern India, arose not earlier than the tenth century. The characteristic feature here is the *gopura*, a lofty truncated pyramid, covered with countless bands of sculpture and carved ornament.

The Indian Saracenic style is a general name for a number of somewhat varying styles, the result of the mixture of Saracenic principles of architecture, brought by the

Mohammedan conquerors of India, and the distinctive architectural features of the different localities where they settled. Under the Mogul emperors in the sixteenth century were erected some most magnificent buildings, such as the tomb of Humayun Shah at Old Delhi, that of Akbar at Secundra, the palaces of Shah Jehan at Agra and Delhi, and the Taj Mahal, built by the same monarch at Agra. See **TAJ MAHAL**.

INDIANA UNIVERSITY, a coeducational state institution at Bloomington, chartered as a university in 1838. It includes a college of liberal arts and schools of education, law and medicine and a graduate department. It also maintains a summer school and a biological station on Winona Lake. In normal years the faculty numbers over 300 and the enrollment is about 5,200. The library contains 170,000 volumes.

INDIAN HEMP. See **HASHISH**.

INDIAN MALLOW, VELVET LEAF, or **STAMP WEED**, a weed of the mallow family. It grows to a height of four feet and has heart-shaped, velvety leaves and small, orange-colored flowers. The fiber is almost as strong as hemp-fiber, and many species are utilized in textile manufacture. Mallow is of perennial and persistent growth, and as a weed is injurious to other crops, especially corn.

INDIAN OCEAN, one of the great salt-water divisions of the earth, extending from Africa eastward to Australia and the East Indies and from Asia southward to the Antarctic Ocean. It is the third ocean in size, only the Pacific and Atlantic being larger. Its area is 17,084,000 square miles. The northern shores are broken up by the projection of the peninsulas Arabia, India and Indo-China. Among the numerous islands in the Indian Ocean, Madagascar, Mauritius and Ceylon are the most important. The chief rivers flowing into it are the Salwin, the Irrawadi, the Brahmaputra, the Ganges, the Indus, the Chat-el-Arab, in Asia, and the Zambezi, in Africa. The winds over this ocean are gentle, though hurricanes are very frequent. The greatest depth is found in the northeastern part, where soundings have been made of 20,340 feet. The average depth is about 10,970 feet.

Through the northern part of this ocean runs the equator, and still in the northern and smaller section runs the tropic of capricorn. Below this latter line the great ocean is little touched by commerce.



A Blackfoot girl

INDIANS, AMERICAN, the red-skinned race which held undisputed possession of the wilds of the Americas before the European invasion of those continents. Once masters of the fairest regions on the globe, the Indians are fast dying out as a pure-blooded race, and in time will be reckoned among the lost peoples of history. When found by the Europeans they represented many degrees of civilization, for they ranged from wild savages to peoples whose achievements made even their conquerors marvel. Of the latter class were the Aztecs of Mexico and the Incas of Peru. Among all primitive peoples, the American Indians as a whole are least associated with that which is degrading and vicious; and that much of romance and charm is connected with their history is shown in the fascinating stories of the conquest of Mexico and Peru, and the *Leather-Stocking Tales* of Cooper.

The name *Indian* is a misnomer, having been bestowed by Columbus and his followers because of the mistaken idea that the newly-discovered lands were a part of India. This name, however, clung to the red man, and he is to-day called *Indian* everywhere, with the qualifying word *American* added for clearness. When the Europeans first entered the present United States and Canada, or Anglo-Saxon North America, the Indians numbered, it is supposed, about 1,000,000. There are at present about 270,000, including those in Alaska. In Mexico, there are nearly 6,000,000 pure-blood Indians, and a still greater number of mixed Indian blood. The millions of South American Indians, of whom a census has never been taken, are in large part admixtures of the primitive race and European stocks. In the United States there are about 175,000 full-blood Indians, but the time is not far distant when there will be none of pure stock, because of the tendency of whites and Indians to intermarry. Counting admixtures, the Indian population of the United States by census, 1920, was 244,437.

The origin of these interesting peoples is a subject that has awakened considerable re-

search. So marked is their divergence from Old World types that authorities believe they have inhabited the American continents a very long time. It is thought probable that they entered North America from Asia by way of Alaska, and later spread over the whole of the New World. In appearance they are most like the Mongolian race. Whether they represent a mixture of Asiatic and European races, or are an original stock, scientists have not been able to determine.

Though the various tribes differ from each other in many particulars, they show certain marked characteristics: the long, straight black hair, reddish-brown skin, scanty beard, heavy brows, receding forehead, prominent nose, high cheek bones, full lips and broad face. As to their traits of character, much can be said in praise of their faithfulness to family ties, reverence for religious ideals, virtuous habits and patient endurance of hardship and pain. The stories of their savage cruelty and treachery were sometimes colored by the viewpoint of the white settlers who replaced them. Certainly the conquerors of the Mexican Aztecs were in every way as savage and unscrupulous as any Indians ever were, and in our own day civilized peoples have been guilty of extreme cruelty under stress of the excitement of war.

Indians of Anglo-Saxon America. *Villages.* When Columbus discovered America the Indians lived in villages, each tribe by itself, in dwellings peculiar to the tribe. Among the Pueblo Indians in the southwestern part of the United States the houses were then, as now, built of mud or stone and crowded together one above another upon the plain, or were built in almost inaccessible caves in the sides of high cliffs. In the Lake region, circular huts of bark, split in broad slabs, were built, while to the east and south, the wigwams were of the same material, but rectangular in shape. The plains Indians, who traveled about much more than the tribes of the east, built temporary *tepees*, or wigwams, of poles, over which they stretched skins of buffalo and other large animals. Generally one house was larger than any of the others, and in this the chiefs met for council; and around it was an open space where the Indians met for worship or amusement.

Dress. The everyday dress of the Indians consisted of little clothing—no more than was necessary for comfort, some tribes going

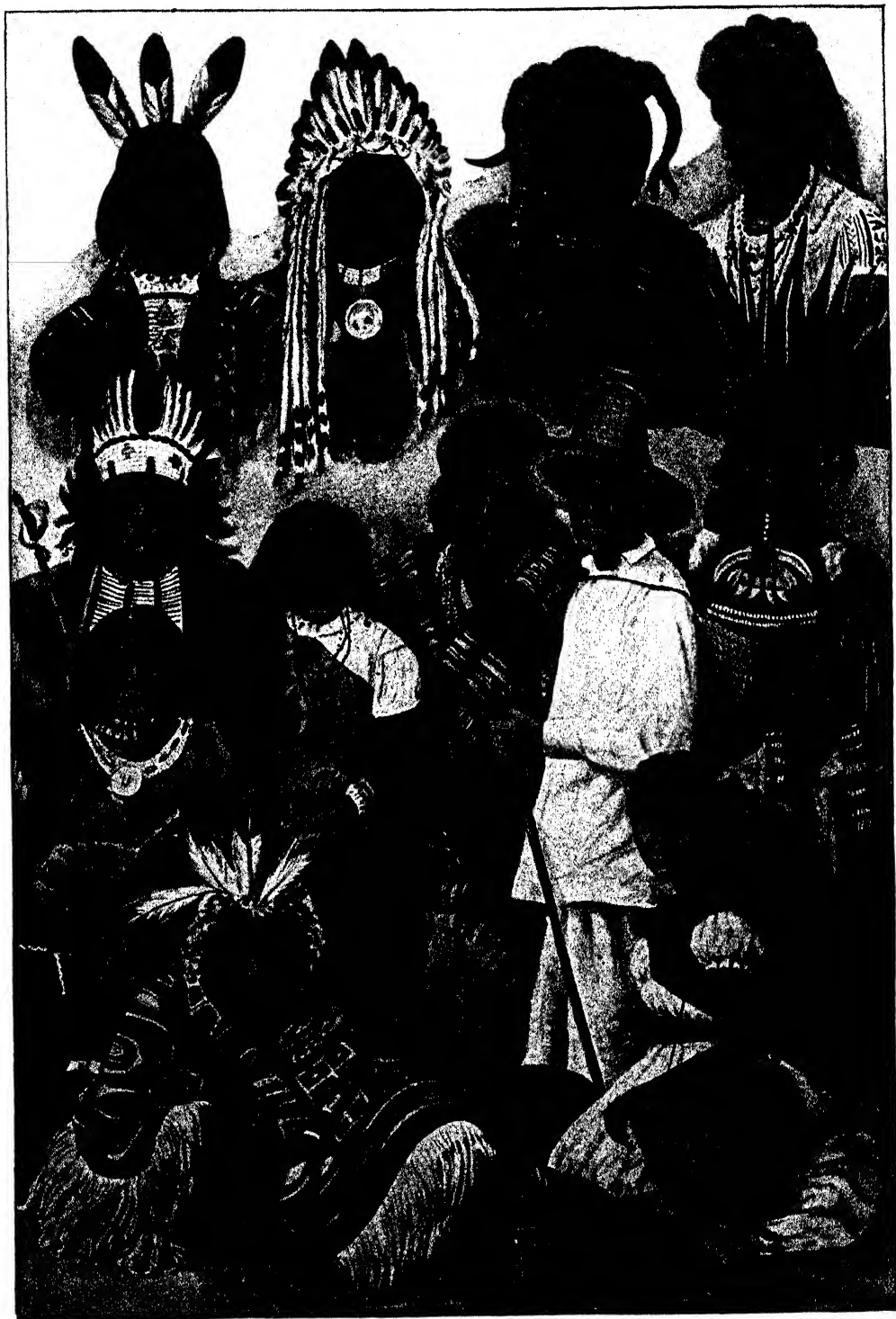
almost entirely naked. From the skins of animals, fibrous plants and the bark of trees the Indians constructed the few garments which were necessary, except in the southwest, where the Pueblos made serviceable woolen garments. In times of ceremony most of the tribes dressed elaborately, with showy garments bedecked with shells, teeth, feathers and other bright objects. Enormous head-dresses of feathers and brilliant necklaces, metal ornaments, earrings and bracelets were also a part of this full-dress costume. Not uncommonly the Indians tattooed themselves, and always before going to war or engaging in any other great undertaking they painted their faces and bodies with bright colors in fanciful designs, which showed the tribe to which the Indians belonged and their purpose in painting themselves.

Food. Most of the tribes cultivated corn, beans and squashes, and some of them, like the Pueblos, lived almost entirely by agriculture. Whenever possible, the Indians ate freely of fruits and of other edible parts of many plants. The northern Indians gathered and stored wild rice and cranberries and made syrup from the maple trees. East of the Alleghany Mountains tobacco was a general product, and along the seacoast and the Great Lakes fish formed a staple article of food. West of the Mississippi the Indians were great hunters, but it is manifestly unfair to say that Indians in general lived wholly by the chase. Except in times of scarcity, they were well fed and lived healthily and at ease.

Language. Tribes that lived near one another were able to communicate by means of signs or with a jargon of mixed words from all languages, and while many of these languages seem to have come from the same stock, yet more than fifty distinct and unrelated languages have been noted.

Domestic Animals. To our mind, the plains Indian is so associated with his horse that it is surprising to remember that until the Spaniards brought the animals to the United States there were no horses there. Domestic animals, in fact, were very rare, the dog being the only one that was common and almost universal. To many tribes he was a beast of burden, a companion-hunter and a protector.

Industries. Flint, obsidian and pipestone were used by the Indians in making most of their implements, such as knives, spears, fish-



AMERICAN INDIANS

1, Mandan.
2, Blackfoot.
3, Dakota.

4, Yucatan.
5, Sioux.
6 and 7, Pueblo.

8 and 9, Mexican.
10, South American.
11, Apache.

12, Bellacoola.
13, Eskimo.

hooks, sewing needles, axes, pots, bowls, mortars and pipes. Many of these were cut out with considerable skill and were handsomely decorated. Some tribes made an article of pottery from clay, and though they did not understand how to glaze it, yet some of their work was capable of taking a high polish. From rushes and grass and the fibers of various plants, such as hemp and cotton and their like, they wove coarse fabrics, and some tribes constructed household utensils with marvelous skill; for instance, baskets of graceful shape, beautified by antique designs, were woven so closely as to be waterproof. They understood the art of preserving skins and making fine leather from them. This and all other industries were practically in the hands of the women, for the men considered it a disgrace to labor.

Games and Amusements. Boys and girls played happily very much as their white brothers and sisters do, imitating in their childish way the labors and amusements of their elders. The girls had dolls, often dressed skilfully in the costumes of grown men and women; while the boys played with bows and arrows, walked on stilts, wrestled among themselves or went on mimic hunting and fishing expeditions. The adults, too, were fond of amusements, most frequently of an athletic type. They played ball, ran races, wrestled, danced, feasted and told stories, and many times neighboring tribes joined in exciting contests. They sang on all occasions, but their music was coarse and rude, being in fact, little more than monotonous chants. They had rude drums, whistles, rattles and flutes, all of which were more noisy than musical. Betting and gambling were very common among the men, who frequently lost all their possessions when luck was against them.

War. The highest ambition of a youth was to be a great warrior, for the tribe celebrated the deeds of its leaders and kept a record of their valiant doings. In most instances the Indians were courageous to a degree, wore no armor and fought savagely with bows and arrows or knives, hatchets and spears of stone. The Indians usually scalped the dead, and the victors put their captives to death, sometimes with cruel torture. Occasionally, however, these captives were adopted by the victors and became loyal members of the tribe that had subdued them. The victorious fray was always celebrated with feasting

and dancing, and sometimes the flesh of conquered braves was eaten by the victors in the belief that the virtues of the dead would be transmitted to the living.

Burial. Though the customs varied in different localities, yet great respect was paid to the dead, and efforts were made to preserve the bodies and protect them from indignity. Usually the favorite possessions of the deceased were buried with him, sometimes in the earth, but occasionally on platforms among the trees.

Government and Religion. It is difficult to give any account of the government and religion which will apply to all the tribes, but in general each tribe was composed of a number of related families or clans. The oldest man in each clan was its leader and ruler, and in turn the oldest head of a clan was the chief of the tribe. Marriages among members of immediate families were forbidden, but there were rarely any marriages outside the members of a tribe, except in those cases where tribes were gathered in a confederacy. Children usually belonged to the mother and were cared for by her relatives, so that a man kept ward over his sister's children rather than his own. Laws were very strict, and punishments were severe. Land was not owned by individuals, but personal property was so held. The limited rights of woman were respected, especially in the household, but the man was supreme. Some tribes held slaves, but the practice was far from common.

For the Indian there was no supreme god; each tribe had its own spirit, that was its special patron. Every living thing was inhabited and controlled by a spirit. The sun, moon and stars were the great spirits; the wind was the breath of the gods, and rain and snow were poured upon the earth by the kindly spirits. The animal or plant which was to any particular tribe most important might become the chief spirit for that tribe, as, for instance, on the plains the buffalo held this rank. The priest and the medicine man were one and the same person, in his latter capacity curing by charms and ceremonies because of his priestly characteristics. While a few simple remedies were used, yet each Indian carried his private charm, which was supposed to protect him from injury and assist in his cure when ill.

Tribal Families. The Indian tribes of North America may be gathered into a num-

ber of families which show some relationship in language and various habits and customs. The principal families are the Algonquian, Athapaskan, Caddoan, Iroquoian, Muskogean, Shoshonean and Siouan.

Mexican and Central American Indians.

At the time the Spanish invaded Mexico and Central America, they found there many tribes having a civilization almost the equal of their own. These Indians built permanent houses of squared and polished stone, had a written language and many books, knew something of arithmetic and a little of astronomy. They made finely woven cloths, brilliant feather work and beautiful ornaments of gold and silver. Of iron they knew nothing. Their religion, bloodthirsty and cruel, was characterized by human sacrifices, and their priests exerted a power little less than that of the king himself. In contrast to these, the Indians of Lower California were the most degraded savages known.

South American Indians. Along the western coast of South America, from a few degrees north of the equator to 25° south of it, were several tribes with a civilization equal to that of the Aztec in Mexico. They built great palaces, the ruins of which still exist, and ornamented them with fine work in gold, silver and bronze. The conquering Spaniards were amazed at the skill of the Indians and carried away with delight vast quantities of their ornaments. The tribes of the tropical regions bordering the Amazon and Orinoco were wild and savage. They knew nothing of work, for the climate made clothing and shelter almost unnecessary, and the streams and forests produced food for the taking. Most of them were fierce cannibals, who did not preserve the scalps of their enemies, though in some cases the entire head was kept. The pampas Indians to the south were more like the plains Indians of the United States. They were not civilized, but had large herds of domestic animals and lived principally upon meat. See accompanying color plate.

Present Condition in the United States and Canada. In both of these countries the Indians are gradually adopting the customs of the white man. In the United States the problem of dealing with the nation's "wards" has been very serious. As settlement proceeded westward the Indians were steadily dispossessed of their lands, the government having adopted the policy of making treaties

with the tribes whose holdings were acquired. Resentment on the part of the Indians because of fancied or real injustice has occasioned numerous wars, but there have been no outbreaks since 1886, when the Apaches surrendered. Since 1849 the conduct of Indian affairs has been managed by a bureau in the Department of the Interior. It has been the policy of the government of late years to encourage the Indians to give up their tribal relations and to become citizens of the United States; in 1917 the Commissioner of Indian Affairs made the following statement:

"The time has come for discontinuing guardianship of all competent Indians. Every Indian, as soon as he has been determined to be as competent to transact his own business as the average white man, shall be given full control of his property and have all his lands and moneys turned over to him, after which he will no longer be a ward of the government. This means the ultimate absorption of the Indian race into the body politic of the nation, and the beginning of the end of the Indian problem."

In 1924 full citizenship was granted by Congress to all Indians born in the United States.

Indian affairs throughout Canada are administered by the Dominion government, under authority granted by the British North America Act. At the head of the Department of Indian Affairs is an official known as superintendent-general. All property held for the Indians can be sold or leased only with their permission, and if such transfers of property take place the money received is carefully invested for them. In certain provinces Indians who meet specified qualifications are permitted to vote. Government inspectors visit the different Indian agencies at intervals to see that the interests of the Indians are properly safeguarded.

Indian Education. In both the United States and Canada the Indians are given opportunity to attend schools under government supervision. In 1917 the United States government was supporting 107 boarding schools and 210 day schools for them. The Indians, both boys and girls, are taught not only the common school subjects, but various vocational branches. In addition to the government schools there are about seventy-five mission schools, conducted by various churches and religious societies. The Carlisle Industrial and Training School was abandoned in 1918. In Canada government aid is extended

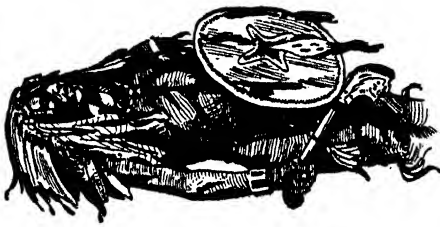
THE AMERICAN INDIAN



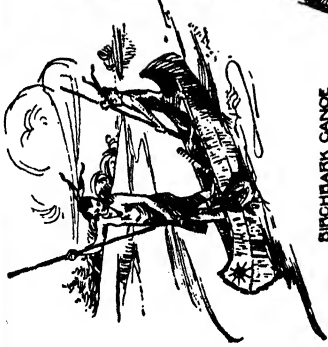
EARLY WEAPONS



WIGWAM
INDIAN DWELLING PLACE



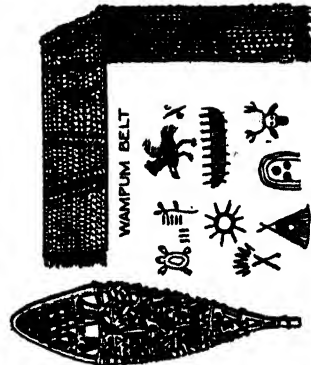
TYPE OF INDIAN WARRIOR



BIRCHBARK CANOE



LATER WEAPONS



SNOWSHOE

WAMPUM BELT

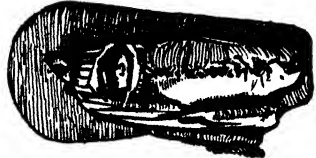
PICTURE WRITING

SUBJECTS FOR STUDY

ORIGIN	ENDURANCE
NUMBER	HIEROGLYPHS
CHRONOLOGY	GOVERNMENT
ETHNOLOGY	TRIBAL RELATIONS
CIVILIZATION	FAMILY RELATIONS
PROGRESS	CLANS
EDUCATION	MODE OF TRAVEL
CHARACTERISTICS	LANGUAGE
APPEARANCE	RECORDS
AGE	ARCHAEOLOGY
SIZE	RELIGION
PERPETUAL WARFARE	DISPOSITION
	SAVAGE
	BARBAROUS
	HALF CIVILIZED



THE CALUMET
THE PIPE OF PEACE



A PAPOOSE

to denominational schools, and most of the institutions are controlled by religious bodies. There are about 7,000 Indians in school in the Dominion.

Indian Reservations are territories set aside for the Indians. In Canada they are known as *reserves*. Residents in such areas are under special government protection, and whites are not permitted to settle on their lands. Schools are maintained in the reservations, and the Indians are taught the customs of civilization, though they retain their tribal relations. In the United States the reservations are gradually disappearing as the Indians are being incorporated into the body politic as citizens. When a reservation is closed, each member of the tribe within it is given a tract of land, and what is left is divided up and sold to white settlers, the proceeds being given to the Indians.

Related Articles. Consult the following titles for additional information:

INDIAN TRIBES

Algonquian	Huron	Onondaga
Apache	Illinois	Osage
Arapaho	Inca	Ottawa
Assiniboin	Iowa	Pawnee
Athapascan	Iroquoian	Pequot
Aztec	Kaw	Pima
Blackfoot	Kickapoo	Potawatomi
Catawba	Kiowa	Pueblo
Cayuga	Klamath	Quapaw
Cherokee	Kootenay	Sac
Cheyenne	Makaw	Seminole
Chickasaw	Mandan	Shawnee
Chinook	Maya	Shoshonean
Choctaw	Modoc	Shoshoni
Comanche	Mohave	Siouan
Cree	Mohawk	Sioux
Creeks	Mohegan	Tuscarora
Crow	Mohican	Ute
Delaware	Munsee	Wampanoag
Five Civilized	Muskogean	Winnebago
Tribes	Narragansett	Yakima
Five Nations	Nawaho	Yaqui
Flathead	Nez Percé	Yuma
Fox	Ojibwa	Zuni
Hopi	Oneida	

MISCELLANEOUS

Atahualpa	Pizzaro, Francisco
Black Hawk	Pocahontas
Brant, Joseph	Pontiac
Calumet	Powhatan
Cortez, Hernando	Sitting Bull
Geronimo	Sun Dance
Hiawatha	Tecumseh
King Philip	Tomahawk
Massasoit	Totem
Montezuma	Wampum
Osceola	Wigwam

INDIAN SUMMER, the name applied to a short season of fair, warm weather which occurs in the late fall in temperate latitudes. It lasts from one to three weeks, and may occur three or four times in a season. On the North American continent it comes in October or November. The air is usually very dry at such times, and forest fires and prairie fires are frequent. In Europe a corresponding season has been variously called "Saint

Martin's summer," "old woman's summer," and "all-hallow summer." The term *Indian summer*, however, has come to be generally used.

INDIAN TERRITORY, a former territory of the United States, set aside between 1820 and 1830 by the government as a permanent home for the American Indians, who were being steadily driven from the rapidly-developing East. The principal occupants of the territory were the Cherokees, Creeks, Chickasaws, Choctaws and Seminoles. Here they established their governments, maintained their own institutions, and prospered under the fostering care of the United States. By 1889 there was no longer reason for continuing a separate organization for them, for they had become civilized and well-to-do, and many had become citizens of the United States. In the latter year Indian Territory was merged into the new state of Oklahoma (which see).

INDIA RUBBER. See RUBBER AND RUBBER MANUFACTURE.

INDICTMENT, *in dité'ment*. See JURY AND TRIAL BY JURY; PROCEDURE.

INDIGESTION. See DYSPEPSIA.

INDIGO, a genus of plants and the blue coloring matter obtained from some of the



INDIGO PLANT

species. The plant is a tall herb of the pea family. That yielding the indigo of com-

merce is native to India. It is about five feet high. The coloring matter is obtained from the leaves and stems, which are cut in mid-summer, boiled and allowed to ferment under water. The liquid is then drawn off and beaten, in order that it may mix with oxygen, after which it is allowed to stand for some time. When the indigo settles to the bottom, the water is then drawn off and the indigo is cut and pressed into cubes, in which form it appears on the market. Commercial indigo contains from fifty to sixty per cent of pure indigo blue, the remainder consisting of substances called indigo gluten, indigo yellow and indigo red. Indigo dyes are made by dissolving the coloring matter in liquids containing more or less ammonia or some other alkali. They are used in coloring silk, cotton and woolen goods and in calico printing. See CALICO PRINTING; DYEING.

INDIGO BIRD, or INDIGO BUNTING, a North American bird of the finch family, which ranges from Canada to the Gulf. In winter it is often seen in Southern Mexico, in Cuba and as far south as Panama. The male is a bright indigo, with a greenish back; the female has brown plumage, and her back is slightly streaked. The birds are easily tamed, and are beautiful songsters.

INDIUM, a metal which leaves a mark on paper like that of lead. It is silver-white in color, and soft. The metal is related to cadmium and zinc, and its spectrum exhibits two characteristic lines, one violet and the other blue. Indium was discovered in 1863 by Reich and Richter in the zinc-blends found near Freiburg, Germany.

INDO-CHINA, a name sometimes given to the southeastern peninsula of Asia, comprising Burma, Siam, Cambodia, French Cochin-China, Tongking, Anam, Laos, Malacca and the Shan country.

INDOOR BASEBALL, a popular gymnasium game, differing little in character and purpose from the outdoor game, except as it is of necessity modified to suit the small area on which it is played. A floor forty by fifty feet is almost a necessity, but the exact shape and size does not matter. The ball, which weighs eight and one-half ounces, is about seventeen inches in circumference, and the bat is smaller than the one used in the outdoor game. There is a national indoor baseball association in the United States, which regulates the game and formulates the rules under which it is played. See BASEBALL.

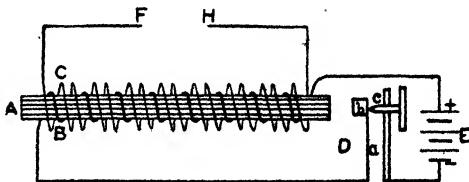
INDUCTION, in *duk'shun*, in logic, the process of reasoning from a part to the whole, from the particular to the general, from the individual to the universal. It is the counter-process to deduction (which see). In inductive reasoning we proceed from the known to the unknown and obtain a conclusion much broader than the premises. Many important laws of natural science have been formulated from the observation of individual cases. For example, Galileo discovered the law, by dropping balls of various weights from the leaning Tower of Pisa, that all falling bodies travel through space with the same rate of speed. Sir Isaac Newton worked out the law of gravitation by pondering over the fact that unsupported bodies fall to the earth. According to a well-known story, his line of thought was started by his observing an apple fall from a tree. In logical induction, therefore, the mind works from particular cases to a general theory.

INDUCTION, ELECTRIC, the process by which an electrical conductor becomes electrified in the presence of an electrically-charged body. If a body charged with either positive or negative electricity is brought near an uncharged insulated conductor it charges the side farthest from itself with its own kind of electricity, and the side nearest with an unlike electrical charge. The Leyden jar owes its high electrical potential to the mutual induction between its inner and outer coatings of tinfoil, the one positively charged, the other negatively. See ELECTRICITY; LEYDEN JAR.

INDUCTION, ELECTRO-MAGNETIC, See ELECTRO-MAGNETISM; INDUCTION COIL; MAGNETO-ELECTRIC MACHINE.

INDUCTION, MAGNETIC, see MAGNETISM.

INDUCTION COIL, an instrument for increasing the voltage of an electric current.



The principal parts of the coil are the *core*, *A*, made of a bundle of soft iron wire; a *primary coil*, *B*, of a few turns of coarse wire; a *secondary coil*, *C*, of many turns of fine wire; an *interrupter*, *D*, and the *battery*,

E. The coils are of copper wire, carefully insulated with coats of varnish or other insulating material.

The interrupter consists of a spring, *a*, to the upper end of which is soldered a small piece of soft iron, *b*, against which a screw, *c*, presses. The screw is tipped with a fine platinum point. When not in action, the end of the spring rests against the platinum point. As soon as the current passes through the primary coil, the core, *A*, becomes magnetized and attracts the piece of soft iron. As soon as this moves over, it breaks the circuit, the magnetism disappears, and it springs back again; thus, the circuit is alternately opened and closed with great rapidity. The rapidly changing magnetic field passing across the great length of wire in the secondary coil induces a current of very high potential in that coil. This potential, or electromotive force, is greatest just at the break of the current. If the opposite ends of the coil, *F* and *H*, are reasonably near each other, a spark passes between them each time the interrupter opens the circuit. Induction coils of this type are now most commonly used for producing sparks to ignite the gasoline in automobile and other types of gasoline engines. However, coils which apply the same principles are widely used in all types of electrical communication. See **ELECTRO-MAGNETISM**.

INDUCTIVE METHOD, in pedagogics, that method of instruction which proceeds from the individual to the general notion, or from separate ideas, gained through observation, to definitions, rules and classifications. It is also called the observational method and the method by discovery. Children obtain their first knowledge by observation and experience; hence they learn inductively, and from the comparison of ideas thus gained they form certain conclusions or class ideas, such as that a body without support will fall, fire is hot, two and two are four.

In the study of geography by the inductive method, the pupil would begin with the study of objects immediately about him, such as the forms of land and water and the plant and animal life around the schoolhouse and in the neighborhood. From this he would proceed to the study of the township and the county. During the progress of the study he would be led to classify and name those objects that are alike, such as hills, valleys, creeks and meadows. Having learned these

classifications, later he would be able to apply them in the classification of similar ideas which he might obtain through reading descriptions of places which he has never seen.

The inductive method is the method best suited to instruction in primary grades. It conforms to the child's method of learning when he enters school, trains his powers of observation, keeps him interested in his work and, above all, leads him to acquire his ideas at first hand. With few exceptions it is also the best method to use in beginning the study of any subject. It is the method pursued in all scientific investigations, and it is that this method may be followed that the higher institutions of learning, such as high schools, colleges and universities, are equipped with expensive laboratories.

But the inductive method has its limitations and cannot be used exclusively. It requires too much time to be followed all through life; hence, when pupils arrive at the age where they can reason, they should depend upon the experience of others for a part of their knowledge. For instance, in the study of grammar, more knowledge can be acquired in a given time by beginning with definitions and rules and learning their application through the study of suitable illustrations in selections of literature, than by first discovering these definitions and rules by observation and experiment. Some studies, such as higher mathematics and history, are essentially deductive in their nature and cannot be successfully studied by the inductive method. Again, conclusions reached through the inductive method may be erroneous because they are based upon insufficient observation. See **DEDUCTIVE METHOD**; **METHODS OF TEACHING**.

INDULGENCE, *in dul'gens*, a term in the Roman Catholic Church, meaning a forgiveness, not of sin itself, but of the earthly punishment attaching to sin. It supposes that the sin is already forgiven before God by sacramental absolution or by perfect sorrow in view of that absolution. The Catholic Church uses the example of Nathan in telling David that his sin was already forgiven by God but that he would have to undergo an earthly punishment for that forgiven sin. The Catholic Church asserts she applies the superabundant merits of redemption to the forgiveness of this temporal debt due to wrong-doing after she has already forgiven, by divine delegation, the external guilt due

to sin. The first use of this power was in the Spanish war against the Saracens in the eleventh century. There are two classes of indulgences, recognized by the Roman Catholic Church: plenary indulgences, which are the total remission, and partial indulgences, which are the partial remission of the temporal punishment due for sin.

INDUS, one of the three greatest rivers of India, rises in Tibet at an altitude of 18,000 feet, and flows into the Arabian Sea. With its branches (Shayok, Kabul, Sutlej, and Chenab) it forms that quintette of rivers which irrigate the Punjab ("Land of the Five Rivers"). The Indus then passes into Sind, and here the British have built one of the largest dams in the world, called the Sukkur Barrage, or the Lloyd Dam (after the governor of Bombay), which has converted 5,000,000 acres of desert into a vast wheat- and cotton-growing area. The river has a delta 125 miles wide.

INDUSTRIAL REVOLUTION, a term applied to the great transformation in the economic life of England in the latter part of the eighteenth and the early part of the nineteenth centuries. It affected both agriculture and industry. In many counties the crops merely afforded sustenance to the farming population. Means of transportation were so defective that a surplus in one section was matched by scarcity in an adjoining section. Leading citizens turned their attention to the improvement of stock and the proper treatment of the soil, with the result of revolutionizing agricultural methods. The continental wars enhanced prices and gave a great impetus to the adoption of new methods. Between 1760 and 1843 nearly 7,000,000 acres of land were enclosed and put to intensive tillage.

At the same time great mechanical inventions brought in the factory system to replace the domestic system of industry. The spinning-jenny was invented by Hargreaves in 1770; Arkwright built mills, powered by horse and later by water; Compton's mule was introduced in 1779; and in 1785 Watt's steam-engine was successfully applied to cotton manufacture. The effect of these inventions was to increase the output. The iron industry was revived by the employment of pit-coal in smelting, and the use of the steam-engine to furnish power for the blast. The wool industry profited from the use of the new cotton machinery. Industry

shifted from the rural communities to the large cities. From 1791 to 1821 the population of England increased 43 per cent.

The readjustments brought about by these changes caused a great deal of hardship to the working classes, but the general effect was to give England a long start over her rivals in trade competition. This transformation appeared in the United States near the close of the first half of the nineteenth century; in Germany, after the formation of the Empire, and gradually in other countries.

INDUSTRIAL SCHOOL, a name which has been frequently applied to a class of schools intended for reformatory or philanthropic purposes, in which trades and industrial work of all kinds are taught. In such schools the industrial work is taught partly as a means of discipline, the primary purpose being to develop character and concentration. Many states have established such institutions. These, however, are generally known by other names, as reform schools or reformatories. See **TECHNICAL AND INDUSTRIAL EDUCATION**; **MANUAL TRAINING**; **REFORM SCHOOLS**.

INDUSTRIAL WORKERS OF THE WORLD, a labor organization of revolutionary tendencies. Organized in Chicago in 1904, it exerted for several years a strong influence in western lumber, textile and mining industries. Its slogan was "Abolition of the wage system." It opposed participation in the war because "all war is capitalistic" and "enslaving to labor." After 1924 its membership largely fell away and its influence as an organization practically ceased.

INERTIA, *in ur'she a*. If a person tries to stop a moving object, such as a rolling ball, or to move an object which is at rest, he must use a certain amount of muscular force, and he finds himself dealing with a property of matter which is called inertia. Scientifically stated, inertia is "that property of matter by which a body when at rest tends to remain at rest, and when in motion to continue that motion, in the same straight line or direction, unless acted upon by some external force." The amount of force required to stop a moving object depends upon the rate it is moving and the weight of the body. In other words, theoretically it requires as much force to stop it as was required to set it in motion. An inert body is one which cannot

move or cannot cease moving in a straight line unless some force acts upon it.

INFANT. See **MINOR**.

INFANTILE PARALYSIS, an infectious disease which attacks children more frequently than adults, and is feared because it tends to cause paralysis of the muscles. This disease, first recognized in 1840, caused a high death rate among American children in 1916, and its peculiarities and methods of combating it were then thoroughly investigated. The germ which causes attacks of infantile paralysis travels by routes not well understood. In fact, the source of no one case has ever been satisfactorily traced. Physicians can only urge the usual preventive methods in case of epidemics, including isolation of patients, cleanliness, careful attention to dieting, elimination of flies, etc.

A child coming down with the disease has fever (not generally above 103°), headache and irregular bowel movements. Sore throat and symptoms of a cold may accompany the early indications of an attack. As the disease develops pains are felt in the legs and feet, the neck becomes stiff and the spine sensitive. Within twelve hours there may be paralysis of the limbs, and in severe cases convulsions and delirium may be present.

No positive cure has as yet been discovered, but injection into the spinal column of a specially-prepared blood serum has been found helpful. The utmost care is needed to prevent permanent deformity of limbs affected by paralysis. Massage, electrical treatment and the use of braces or splints are among the remedies used. In the United States the most notable sanitarium for treatment of infantile paralysis is at Warm Springs, Georgia.

INFANT MORTALITY. Vital statistics compiled in all civilized countries show that the death rate among babies is far too high. Fully one-fifth of all persons who die in a specified period are children who have not reached their first birthday. In the United States the highest mortality of infants occurs among the poor foreign-born, where ignorance, poor ventilation and lack of sanitation claim many victims. The United States Children's Bureau of the Department of Labor, which is conducting a zealous campaign to reduce the baby death-rate, states that there are three groups of diseases which are responsible for the majority of deaths among infants. These groups are as follows:

(1) Digestive diseases, which cause most of the deaths of babies in summer, especially of those fed from the bottle. The causes include improper feeding, impure milk, heat, overcrowding, bad sanitary conditions, flies and carelessness.

(2) Diseases of the lungs, caused by germs that thrive on filth and bad air.

(3) Diseases due to conditions affecting the child before or at birth, caused by sickness of the parents, overwork of the mother, and improper care before or at birth.

A survey of these facts shows that individual education and concerted action on the part of the community are necessary to remedy conditions. The community must be aroused to the need of proper standards of living and the elimination of poor housing conditions. Mothers must be taught how to care for their babies, and how to take care of themselves. Some of the agencies which are working for these results are infant welfare societies, health boards, social settlements and visiting nurses associations. Those who are directly interested in the welfare of children will find helpful suggestions in the article **CHILDREN'S DISEASES**.

INFANTRY, the principal branch of modern armies, strongly supported in its operations by artillery and aircraft. Infantry maneuvers rapidly and fights on foot. Most of the great armies of the world have been of infantry, and we read in history of the solid phalanx, eight or ten files deep, that moved with almost irresistible force against the foe. Under modern conditions of warfare troops massed in solid formation are subjected to terrible slaughter because of the deadly force of rapid-fire machine guns and heavy artillery. Accordingly, an open or extended order of advance is now necessary with infantry, and this openness requires more perfect discipline and more individual intelligence than when the infantryman was closely supported by his comrades.

During the World War it was the habit of German officers to send their infantry against the allied armies in solid formation, hoping to crush opposition by sheer weight of numbers. Such tactics were used in the early drives of the spring offensive of 1918, when Germany was staking all on a final blow. The severe losses resulting caused an abandonment of this policy (see **WORLD WAR**). For the organization of United States infantry, see **ARMY**.

INFECTION, a diseased condition produced by the growth of bacteria in the body.

Every infectious disease, as scarlet fever, smallpox, diphtheria, typhoid or cholera, is propagated by some organism. These are freed from the diseased body by expectoration, coughing, breathing and various other means and are thus liable to be transmitted to others. This may be done either directly or through the contamination of drinking water or milk. See GERM THEORY OF DISEASE, and articles on various diseases.

"IN FLANDERS FIELDS." See McCRAE, JOHN.

INFLUENZA, or **GRIPPE**, *grip*, an infectious disease having the symptoms of a severe cold, notably headache, chills, fever, discharges from the nose and an aching throughout the body. Ordinary attacks yield to such measures as the administration of laxatives, hot mustard foot baths (to bring on perspiration), and the administration of hot drinks and medicines containing quinine. Absolute rest in bed, warmth and quiet are necessary for speedy recovery.

Spanish Influenza, a virulent form of influenza which swept over various parts of the world in 1917-1918. It was so called because its ravages were in the beginning of the epidemic most serious in Spain. It caused an abnormally-high death rate both in Europe and America, and was equally a menace to World War soldiers and to civilians. Besides manifesting the ordinary symptoms of influenza, this form of the disease frequently developed serious complications, such as pneumonia, bronchitis, heart trouble and mastoid abscess.

Nearly every community in the United States adopted quarantine regulations for varying periods. People were urged to avoid crowds, to smother coughs and sneezing in handkerchiefs, to keep their homes well ventilated and to take good care of the general health. Sources of infection were secretions from the nose and throat, which were carried about in the air by dust and were transmitted both directly and indirectly. A few months after the epidemic subsided a peculiar disease developed in which the patient experienced prolonged sleeping spells, sometimes dying without regaining consciousness. Physicians were unable to determine its relation to influenza.

INFUSORIA *in fu so' ri a*, a class of microscopic one-celled animals, which are to be found in almost any exposed body of stagnant water. The animal has one or more hair-

like appendages near the mouth opening, which enables it to seize food. Most infusoria live free, detached lives; some, however, attach themselves to the stalks of aquatic plants or to stones. The largest are visible without a microscope.

INGELOW, *in'je lo*, **JEAN** (1820-1897), an English poet and novelist, of whose private life little is known. In 1863 she published her second volume of poems, which gained immediate and wide popularity; and some of the poems included in this volume, notably *The High Tide on the Coast of Lincolnshire* and *Divided*, have retained much of their early popularity. Later poems are *Songs of Seven* and *Poems of the Old Days and the New*. The author's novels, notably *Off the Skelligs*, *Sarah de Berenger* and *Don John*, possess much charm.

INGERSOLL, **ONT.**, in Oxford County, on the Canadian National and Canadian Pacific railways, ten miles southwest of Woodstock. Its principal industries include manufactures of agricultural implements, hay forks, brooms, furnaces, tools, furniture, woolens, fertilizers, cereals, flour, condensed milk and cheese. It has natural gas and electric power. Population, 1931, 5,233.

INGERSOLL, **ROBERT GREEN** (1833-1899), an American lawyer, lecturer and writer, and world-famous as an opponent of Christian orthodoxy, born in Yates County, N. Y. He began the practice of law in 1857 in Peoria, Ill., and in 1862 was made colonel of a regiment of Illinois cavalry. He was appointed attorney-general for Illinois in 1866, having transferred his allegiance from the Democratic to the Republican party. At the national convention in 1876 he leaped into prominence by an eloquent speech in favor of the candidacy of James G. Blaine. In his lectures and in his writings he attacked such common religious views as belief in a personal Deity, an actual hell and heaven, the inspiration of the Bible, the divinity of Christ, immortality and everlasting punishment. His eloquence and personal magnetism gave him an influence in favor of agnosticism second only to that of Thomas Paine, from whom he drew most of his arguments. He was the author of several essays upon literary criticism.

INHERITANCE TAX, a tax levied on property acquired as a legacy. Since the period of the Roman Empire this method of raising revenue has been widely employed.

In the United States every State but two—Alabama and Nevada—have passed laws providing for levying a tax on inheritances. In Florida such a tax was revived in 1930, after temporary abandonment.

These state laws differ widely in detail, but most of them differentiate between the succession of property to lineal descendants and the succession to distant relatives or those not related. The rate is usually progressive; that is, large inheritances are taxed at a higher rate than small inheritances, and there is usually an exemption varying from \$500 to \$5,000. In Illinois a person inheriting over \$250,000 from some one to whom he is only remotely related must pay 30 per cent of such inheritance. During the Civil War Congress passed an inheritance tax, but it was repealed after the restoration of peace. In 1916 this form of taxation was revived as a war necessity. In 1935 the rates were fixed to range from 2 per cent on the first \$10,000 over \$40,000 and ascending to 70 per cent on estates of more than \$50,000,000.

In Canada the provincial governments only levy an inheritance tax, none being levied by the central government. Courts have held that deathbed gifts, made obviously to avoid the inheritance tax, are liable the same as any other part of the estate.

INITIATIVE, *in ish'i a tiv*, a device in government originating in Switzerland by which the people may take the first step in law-making, and may thus acquire laws which ordinarily might be denied them by a reluctant legislature. The initiative aims not to abolish the usual law-making bodies, but to supplement the work which they do. In 1918 more than twenty states possessed some form of initiative legislation.

Such laws differ in detail, but in general they provide that a small percentage of the voters of a state, generally from 3% (in Ohio) to 25% (in Arizona), may petition for special legislation, the exact form of the law desired being a part of the petition. According to the usual method, the measure must then be brought, without amendment, before the legislature. In some states, if the legislature gives an adverse vote the measure is dead; in others it is then brought before the people, and if carried by them becomes a law without legislative interference; the governor has no veto power in such cases. According to another method, which has not as yet become very firmly established, after

the initial petition has been filed the proposition is submitted directly to the people.

The initiative has become popular in city governments, where it is somewhat simpler in its operation than in state affairs; several states permit initiative privileges in cities while denying them to the rest of the state. Oregon was the first state to embody initiative provisions of the most advanced kind in its constitution (1902), see **RECALL**; **REFERENDUM**.

INJUNCTION, in American law, a writ issued under the seal of a court of equity to restrain a person known as the defendant from doing, or to order him to do, something contrary to his wishes. Thus an injunction may be issued to prevent a man from turning a stream of water from its course, to restrain a street-railway company from laying tracks on a street without gaining permission of the property owners, to restrain a person from transferring property, or to compel a man to stop the construction of a fence which he is building on land claimed by another. An injunction is temporary in its immediate effects; its provisions must be respected until a general hearing can be conducted. When the merits of the case are presented, if the court concludes that the petitioner's grievance is justified in law the injunction will be made *permanent*, and its provisions must be obeyed. If the petition seeks to impose unlawful measures against a defendant the court will reject it by dissolving the injunction. Disobedience of an injunction constitutes contempt of court (see **CONTEMPT**).

INK, a colored fluid used in writing and printing. The black writing ink of commerce is the most common kind. It is made from nut galls, copperas, gum senegal and water. Twelve pounds of nut galls, five pounds of copperas and five pounds of gum make twelve gallons of ink. In much of the ink placed on the market, logwood takes the place of nut galls, since it is somewhat cheaper. The iron in the copperas acts upon the tannin in the solution of nut galls and on exposure to the air turns this black. This is the reason why ink turns dark as it dries. The so-called writing fluids contain little or no coloring matter except such as is formed by the union of the copperas with the tannin, but inks usually contain other coloring matter, so that they can be more readily seen when applied to paper.

Colored inks are prepared by dissolving various dyes in water to which a solution of gum arabic or some other gum is added. Red ink is made from Brazil wood or carmine or aniline dye. Blue ink is colored by Prussian blue. Green ink is usually made from the aniline dye. Copying inks contain a small quantity of glycerine or sugar to prevent their rapid drying and to enable them to stick to the copying paper.

Printing ink is made by mixing the best quality of lampblack with boiled linseed oil, to which a small quantity of soap and rosin has been added. This ink is thicker than paint and is thoroughly mixed and ground, making a preparation that will flow readily over the ink rollers and spread evenly upon the type. See PRINTING.

INLAND REVENUE. See INTERNAL REVENUE.

INNESS, in'is, GEORGE (1825-1894), one of the greatest landscape painters America has produced. He was a pioneer, in a way, branching out into new and original expression in the portrayal of nature. His earlier pictures show influence of the Barbizon School, but those of his maturer years lean toward the impressionistic ideal. All show a fine poetic feeling for light and color. In his later work form is subordinated to atmospheric effect. The objects in his scenes have no individual value apart from the whole, but all melt together to form a harmonious ensemble.

Inness was born at Newburgh, N. Y. He had little instruction of value until he went to Paris in 1854. On returning to America he opened a studio at Brooklyn, N. Y. Later he moved to Medfield, Mass., where he painted *Medfield Meadows*. In 1862 he went to live at Eagleswood, N. J., and the last years of his life were spent in or near New York City. Inness was honored both at home and abroad. He was a member of the National Academy and of the Society of American Artists. His *American Sunset* was chosen as a representative work of American art for the Paris Exposition of 1867. A fine collection of his paintings is owned by the Art Institute of Chicago; a smaller collection is in the Metropolitan Museum, New York; his two landscapes *Georgia Pines* and *Niagara* are in the National Gallery, Washington. See BARBIZON PAINTERS; IMPRESSIONIST SCHOOL OF PAINTERS.

INNOCENT, the name of thirteen popes, the third of which was most prominent in history.

Innocent I, was Pope from 402-417. During the pontificate the Holy See developed relations with other Churches, both Eastern and Western. He maintained the right of the Roman bishop to hear appeals from other churches, and his letters contain numerous assertions of unlimited jurisdiction. After Rome was plundered by Alaric, Innocent undertook to repair the damage done to the churches. He espoused the cause of Saint Chrysostom, who had been unjustly deprived of the See of Constance. He governed the Church well for more than fifteen years, and after his death was canonized.

Innocent II, was Pope from 1130 to 1143. He was opposed by a faction of the cardinals who set up Anacletus II as antipope. In 1139 he was installed in the Lateran at Rome by Emperor Lothair, but did not gain undisputed possession before the death of Anacletus in 1138. In 1139 he held the second Lateran Council and confirmed the condemnations pronounced by several previous councils on Abelard and the followers of Brescia.

Innocent III, after a distinguished career as a student at Rome, Paris and Bologna, was made cardinal, and eight years later, at the age of thirty-eight, he became Pope. He was the greatest Pope of the name, and held office from 1198 to 1216. The chief aim of his ecclesiastical policy was to vindicate the Papal claim of the supremacy of the Church over the State. He began with the restoration of the Papal authority in Rome, but soon extended his influence to all parts of Europe. He forced Philip Augustus of France to take back his repudiated queen; instituted the fourth Crusade, which resulted in the capture of Constantinople from the Greeks and the establishment of the Latin Empire; compelled John of England to acknowledge the feudal sovereignty of the Pope and pay an annual tribute; instituted the crusade against the Albigenses in 1208 and presided at the celebrated Lateran Council in 1215. He was, moreover, an energetic worker for public and private morality and lent his influence to the advancement of every good cause. He died in the midst of labors to promote peace among the Italian cities.

Innocent XI, who was Pope from 1676 to 1689, was an energetic and judicious reformer. Throughout his pontificate he was involved with Louis XIV in conflicts, of which the most serious arose when the Pope attempted to put an end to the king's practice of keeping sees vacant and appropriating their revenues. The French clergy expressed their views of the matter in their Four Propositions of the Gallican Clergy.

Innocent XII, after filling a number of important diplomatic posts, was made a cardinal by Innocent XI and was elected to the Papacy after a session of the conclave lasting nearly six months. During his Papacy (1691-1700), he brought about a reconciliation with

France after the French clergy had retracted the Four Propositions.

INNOCENTS, FEAST OF HOLY, variously styled by the Roman Catholic Church *Innocents' Day* and *Childermas*, a festival observed in commemoration of the massacre of the male children of Bethlehem by order of Herod (*Matthew II*, 16). The celebration in some churches is on the twenty-eighth day of December, in others on the twenty-ninth.

INOCULATION, *in ok u la'shun*, in medical practice, a minor operation for the prevention and cure of certain infectious diseases. A specially-prepared substance is injected into the tissues or fluids of the body. This substance has the power of destroying the poisonous germs then present in the system or which may later be present, and it consists usually of a weakened culture of germs causing the disease. Vaccination to prevent smallpox and injection of antitoxin to prevent diphtheria are examples of preventive inoculation. Injection of a substance to cure a disease already developed is called *curative* inoculation. An example is the use of Flexner's serum for the cure of cerebrospinal meningitis. Through the instrumentality of inoculation typhoid fever and smallpox were almost eliminated in the armies of the fighting nations during the World War. In recent years the process of inoculation has been successfully used in the treatment of other diseases, notably of pneumonia, influenza and hay fever.

INQUEST, *in'kwest*, a legal inquiry into the cause of death of any person when the cause has not been attested by a physician as natural. The investigation is in charge of the coroner (which see), who impanels a coroner's jury of six men. Under his direction the jury seeks for facts by calling witnesses, who testify under oath. Their verdict may declare that a crime has been committed, and it may order that suspected persons be held for trial; or, it may not be possible to reach conclusions which warrant criminal action. Suspected persons may testify in their own behalf at an inquest.

INQUISITION, *in kwi zish'un*, THE, an ecclesiastical court in the Roman Catholic Church, officially known as the Holy Office, for the discovery and suppression of heresy. In the early ages of Christianity, civil as well as ecclesiastical government rigidly opposed all heresy. A person suspected, or discovered to be guilty, of heresy was liable

to be arrested and detained in prison to await trial by the judges. The proceedings were usually conducted secretly. The suspect had the right to make known his enemies, whose evidence would be excluded, but a confession of guilt was sometimes extorted by torture, though such a confession, in order to be accepted, had to be repeated afterwards without torture. As a punishment, those convicted had to make pilgrimages, wear some badge, as the yellow cross, as a mark of disgrace, or be sentenced to imprisonment and, in extreme cases, to death (see HERETIC). The death penalty could, however, be inflicted only by the State and was resorted to in comparatively few cases. Thus, between 1308 and 1322 out of 636 persons convicted of heresy only 40 were condemned to death.

From the time of Constantine the doctrines of the Church were regarded as the basis of social order and the bulwark of thrones. Those who opposed them were therefore regarded as the enemies of both. A ruler was required to enforce the laws of the Church as part of his duty as a Christian. If he refused to do so, he might be excommunicated or even deposed. After the formation of the Nicene Creed, Constantine made strenuous efforts to suppress all dissent from the principles laid down therein. He punished the Donatists with fines and confiscation and caused the books of the Arians to be burned. His successors for several centuries cooperated with the bishops in discovering and punishing heresy. The measures resorted to were usually mild and yet quite effective. In the East, from 385, heresy was legally punishable by death, but this sentence was seldom delivered. In the twelfth and thirteenth centuries, the spread of certain heretical sects—as the Albigenses and Waldenses—roused the Church to a realization of the necessity of increased vigilance. Finally, a permanent court, confined chiefly to the Dominican order, was instituted, its duty being to deal with this branch of the work of the Church.

In Spain the Inquisition developed into an organization whose work is generally condemned by Protestants and Catholics alike. There are, however, those who are inclined to defend it and who hold that the facts have been grossly misrepresented in history. One concession must in all justice be made—that many of the cases tried by the Spanish In-

quisition were not really heresies, but, rather, crimes such as would now be brought into the ordinary civil courts, and the punishments inflicted were probably in many cases just. An ordinary tribunal similar to those of other countries had existed in Spain from an early period. The rulers Ferdinand and Isabella, on the pretext of a plot to overthrow the government, obtained permission from the Pope to reorganize the Inquisition, reserving, however, the right of appointing the inquisitors and of controlling the entire action of the tribunal. In 1480 the Cortes sanctioned the institution, and the best authorities agree that from this time on the Spanish Inquisition became a State tribunal. Its work began in 1481 and was actively conducted until the latter part of the seventeenth century. A conservative estimate places the number of executions at 4,000. The popes endeavored to mitigate the rigor of the Spanish court's proceedings, but were unable to accomplish much with the royal tribunal. Finally, in 1808, the Inquisition was suppressed, but under the Restoration it was revived. On the establishment of the Constitution, in 1820, it was again suppressed, but was not finally abolished until 1834.

In Rome and the Papal States the Church never ceased from the time of its establishment to exert a watchful control over heresy, punishing it with imprisonment and civil disabilities, but rarely, if ever, with death. Berger says there is no instance of death for heresy at Rome, and Archbishop Spalding says that it would be difficult to prove such an instance. The Congregation of the Holy Office still exists, but its chief concern now is with the suppression of heretical literature.

INSANE ASYLUM, or HOSPITAL FOR THE INSANE, an institution established for the treatment of persons who are mentally unsound. Many of these are public institutions, under the care of the state or county in which they are located, and are supported by taxation; others are established by charitable persons and are given large endowments; a third class consists of private institutions, in which patients are kept at fees proportionate to the accommodations they receive.

Whether public or private, such institutions are now under strict control of the government and are frequently visited by of-

ficials, who see that the patients are kindly and properly treated. Formerly, the insane were considered as little better than wild beasts, and many hospitals were places of unmitigated cruelty, but now everything possible is done to make a patient's life pleasant; force is not used except when necessary, and the nurses and attendants are trained in their work. The result of such conditions has been manifest, not only in the increased comfort of the confined patients, but in the large numbers of cures that have been effected, even of cases that were once considered hopeless.

INSANITY, a general term applied to every form of mental disorder, whether consisting of a total lack or loss of understanding, as in idiocy, or in the diseased state of one or several of the faculties. Medical writers have adopted different systems of classification, but perhaps the most convenient is that which includes all mental diseases under the four heads of mania, melancholy, dementia and idiocy.

Idiocy is a condition of feeble-mindedness. The victim is below normal in intelligence, and is incapable of intellectual development.

Dementia is marked by a confusion of thoughts, loss of memory, childishness, diminution or loss of will power and general weak-mindedness.

Mania is characterized by the disorder of one or several of the faculties or by blind impulses to acts of fury.

Melancholy, or *melancholia*, consists in a depression of spirits; the mind is so occupied by dark forebodings that by degrees it becomes unable to judge rightly of existing facts, and the faculties become disturbed in their functions. Sometimes melancholy ceases of itself or is cured by medical aid, and in other instances it progresses to death. Not infrequently the patient is led to suicide.

The causes of insanity are numerous; the most common, as shown by the records of state hospitals for the insane, are loss of friends, business troubles, overwork, religious excitement, alcoholism and a great variety of physical causes arising from disease or vicious habits. There can be no sudden cure of insanity by the use of drugs, and the treatment of cases must vary according to the causes which produced the malady. It is estimated that more than half of the cases of mania and melancholia recover, though certain other forms are never curable. In civi-

lized countries provision is made for the cure of insane patients in well-appointed hospitals, where skilled attendants may give each sufferer the best attention. See **INSANE ASYLUM**.



INSECTICIDES, *in sekt i sides*, AND FUNGICIDES, *fun'jy sides*, preparations for destroying insects and fungi injurious to plants. The preparations for destroying insects are known as *insecticides*, and those for destroying fungi as *fungicides*. Sometimes the same preparation is suitable for both purposes.

Insecticides. Insecticides need to deal with two classes of insects, those that live upon the outside of the plant, such as caterpillars, and those that live by sucking the sap of a plant, such as plant lice; preparations which are suitable for the first class of insects have no effect upon the second. Insects which feed upon the leaves or other plant tissues may be destroyed by some preparations containing arsenic. The most valuable of these are the following three mixtures, according to the best authorities:

Arsenic Solution. This is prepared by adding to four ounces of Paris green two pounds of slaked lime and forty gallons of water. This makes a good solution for spraying.

Kedzie Mixture. This is prepared as follows: Boil two pounds of white arsenic with eight pounds of sal-soda (carbonate of soda) in about two gallons of water, until the arsenic is dissolved. Put this solution into a jug and keep it corked. It is a stock solution, to be used as needed. For spraying, slake two pounds of fresh lime. Add this and one pint of stock solution to forty gallons of water and mix thoroughly. The stock solution is intensely poisonous and should be labeled poison and kept in a secure place.

Kerosene Emulsion. This is the best mixture for the sucking insects. To prepare it, dissolve two pounds of hard soap in a gallon of boiling soft water, add two gallons of kerosene and mix thoroughly. For a strong solution add to this twenty-seven gallons of water. For a weak solution add forty-five gallons of water.

Fungicides. Fungi can be divided into two classes, those that grow on the outside of a plant and those that grow on the inside and appear on the surface only when full-grown. The fungicide must be adapted to the nature

of the growth. The following are the most useful preparations in destroying fungi:

Sulphur. This is a common fungicide of the hothouse. It is used by sprinkling it on a surface sufficiently warm to vaporize it. This deposits the fine sulphur powder or flowers of sulphur on the plants, and when the work is successfully done the results are satisfactory. Care should be taken not to ignite the sulphur, since gases from its burning will destroy the plants as well as the fungi.

Bordeaux Mixture. This is prepared as follows: Dissolve four pounds of copper sulphate (blue vitriol) in four gallons of water, by suspending the sulphate in a bag in the water. Slake four pounds of fresh lime in five gallons of water. Pour these solutions into thirty gallons of water and mix thoroughly. For delicate plants, such as peach trees and those having young foliage, an extra pound of lime and twenty-five gallons more of water should be added.

Copper Carbonate Solution. This is prepared by dissolving an ounce of copper carbonate in one pint of ammonia and adding ten gallons of water to the solution. This solution will not discolor foliage and is nearly as effective as the Bordeaux mixture.

Insecticides and fungicides should be applied with the greatest care. The work is most successful when the application is in the form of a spray. The apparatus required is a force pump and a hose having a nozzle constructed especially for the purpose. The spray should be so fine that it will touch all parts of the plant and moisten them, but will not throw a sufficient quantity of liquid to cause it to run down. In spraying tall trees, as apple trees, ladders are necessary. Plants should be sprayed when the condition indicates that the insect or fungus is making its appearance. These conditions must be determined by the orchardist; but he should observe one very important principle, which is, never spray while the blossoms are on the trees.

INSECTIVORA, *in sec tiv'o rah*, from two Latin words, *insectum*, meaning *insect*, and *vorare*, meaning *to devour*, is the name applied to a class of mammals that feed chiefly on insects. Most of these animals are small. They hunt their prey at night and are provided with teeth well adapted for breaking the shell covering insects. They are of value to farmers in preventing an overwhelming increase of insect pests.

Related Articles. Consult the following titles for additional information:

Hedgehog
Insects

Mole
Shrew



INSECTS. Is an insect useful? Is it beautiful? Is it dangerous? No one could answer questions like these simply by saying "yes" or "no," because the class to which the name insects is applied includes thousands of different species and uncounted millions of individuals, of many degrees of usefulness, beauty and harmfulness. There is no other class in the animal kingdom, on land or in the sea, which claims so many members

as the class *Insecta*, as scientists designate it. The various species include groups that prey on fruit trees and other valuable crops, causing serious losses to the farmer, but in considering these we must remember also the beneficial butterflies and bees, which feed on the nectar of flowers and by carrying pollen from one plant to another help in the work of fertilization, and so make flowers and fruit possible. Again, many useful products are contributed by insects, including honey, silk, wax and a valuable dyestuff called cochineal. While some insects, like the mosquito and fly, are carriers of disease, others help to check disease by feeding on dead and decaying matter. Thus we see that the favorable and unfavorable things to be said about these small creatures about balance one another.

What Is an Insect? While an insect is generally thought of as any tiny creature that crawls about or has wings, scientists tell us that there are certain particulars that are common to insects alone, and that not all crawling creatures possess them. The spider, for example, is not an insect, though it may resemble one. Insects never have more than three pairs of legs, while the spider has four. Another characteristic peculiar to insects is the division of the body into three parts—head, thorax and abdomen—each part consisting of several rings, or segments. All insects, except a few undeveloped forms, have wings, and they are divided into seven different classes according to number and kinds of wings. These classes are named and described in the accompanying chart.

Other Characteristics. There are usually about eighteen segments, or rings, to each

insect, though it is not often possible to see all of them. The head is usually composed of four segments, closely joined together; the thorax, of three segments, and the abdomen, of the remaining ones. The legs are all borne upon the thorax. Each leg consists of from six to nine joints. Normally, two pairs of wings are present, but one or the other may be wanting. The wings are expansions of the sides of the second and third sections of the thorax and are attached by slender tubes. In the beetles the anterior pair of wings are hardened into protective cases, which cover the membranous posterior wings. The head carries a pair of feelers, a pair of eyes, usually compound, and the appendages of the mouth. The latter are in two typical forms, one intended for chewing, as is shown in the beetle, and the other for sucking, as is shown in the butterfly. The abdominal segments move easily one upon another, and at the extremity they are often armed with defensive organs.

The insect breathes through pores along the sides of its body, and has a well-developed digestive tract, consisting of gullet, crop, gizzard, stomach and intestine. The colorless or greenish blood runs through the body, but not in a regular system of blood vessels. The sensitive nervous system is composed of a series of knots or ganglia, placed along the lower side of the body and connected by a set of double nerve cords.

Insects are produced from eggs. When these hatch, the little animals usually show no resemblance to the insect that laid the eggs. In this, their first state, they are called caterpillars or worms, or, more accurately still, *larvae*. Of course they are not worms in the sense in which the zoölogist uses that word. They live for some time as larvae, eating heartily and shedding their tough skins whenever they become too confining. When the larva is full-grown, it goes into a quiet, resting state, unlike either caterpillar or perfect insect. In this form it is called a *pupa*, which in some species is enclosed in a silk cocoon. After resting a time in this condition, the insect emerges from the pupa as an *imago*, that is, the fully perfected form in which eggs are laid for another cycle of life. These three changes constitute what is known as a complete metamorphosis. Not all insects pass through these three stages. The grasshopper, for instance, can be recognized as a grasshopper as soon as it comes out of



1. The Neuroptera (*nu rop' te rah*).

- a. So called because of the network appearance of the ribs of their wings.
- b. Head distinct from thorax; the antennae generally slender.
- c. Have no stings.
- d. Examples: Springtails, May flies, dragon flies, ant-lions, scorpion flies, caddis flies.



2. The Orthoptera (*or thop' te rah*).

- a. The young bear a strong resemblance to their parents.
- b. Have four wings lying straight along the body.
- c. About 10,000 species.
- d. Examples: Crickets, cockroaches, grasshoppers, katydids.



3. The Hemiptera (*hem ip' te rah*).

- a. Usually called bugs, destructive and loathsome.
- b. The metamorphosis incomplete; the young do not resemble parents.
- c. The mouth adapted for sucking, live on blood and juices of plants.



4. The Coleoptera (*co le op' te rah*). The beetle.

- a. The largest order, 150,000 species.
- b. Pass through a regular metamorphosis, their pupa state lasting sometimes for several years.
- c. Different in size, shape and characteristics. Various methods of defense.



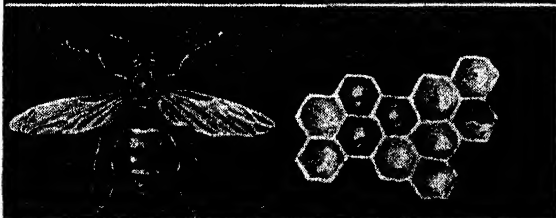
5. The Diptera (*dip' te rah*).

- a. Two-winged insects. Two families—the fly and the mosquito.
- b. The eggs of mosquitoes laid in stagnant fresh water, 200 to 400 to a mass.
- c. Only the female proboscis fitted to pierce the skins of animals.
- d. Transmission of disease by mosquitoes.



6. The Lepidoptera (*lep i dop' te rah*).

- a. The moths and butterflies.
- b. Wings covered with minute hairs or scales, and their mouths adapted to sucking.
- c. Their larvae injurious to vegetation.



7. The Hymenoptera (*hy men op' te rah*).

- a. The gauze-winged insects.
- b. Mouth formed for biting and sucking.
- c. The abdomen of the female usually formed with a sting or saw, as in the case of the bee and certain species of ants.

the egg. Insects have been divided into three sections, according as they undergo no metamorphosis, an incomplete one or a complete one.

Suggestions for Study. The chief ends to be sought in lessons on insects should be the gaining of knowledge of their life history, and along with this an understanding of practical means for preventing the ravages of those destructive to crops. In this work the following suggestions will be helpful:

1. Only a little work of this sort should be attempted by children below the fifth grade, and this should be of the most general character.

2. In beginning the study, select insects large enough to enable the pupils readily to see the principal parts. The grasshopper, butterfly or moth are good specimens for the first lessons.

3. Place a number of the insects to be studied in a cage where the children can observe them for a few days before beginning the lessons.

The cage can readily be made by taking a box and cutting away a part or all of one side and covering the opening with a wire screen, being sure that the meshes are fine enough to prevent the escape of the insects. A few perches should be placed in the box, and the one having it in charge should see that the insects are kept supplied with fresh leaves from the plants upon which they feed. A daily sprinkling of these leaves will provide all the water necessary.

4. Prepare an insect net. To do this, procure four or five feet of No. 12 wire from a hardware store. Bend it around a flower pot or some other cylindrical object so as to form a loop about a foot in diameter, crossing the wire six or eight inches from the end and giving it two firm twists. Clamp this loop into a vise and twist the ends closely together. Take a broom handle or any other stick of similar size and fasten the twisted end of the wire to this handle. Procure about a yard of tarlatan or cheesecloth, and make a conical bag having a mouth the size of the loop. The bag should be at least two and one-half times as deep as the frame is wide, so that it will lap over easily when the insect is caught. With a little care and skill one soon becomes expert in capturing insects with this little apparatus, and it furnishes the children with a great deal of sport and outdoor exercise.

5. Provide yourself with a magnifying glass. A small microscope costing less than a dollar will answer for all ordinary purposes. The glass should be kept where it can be used by the pupils when they need it.

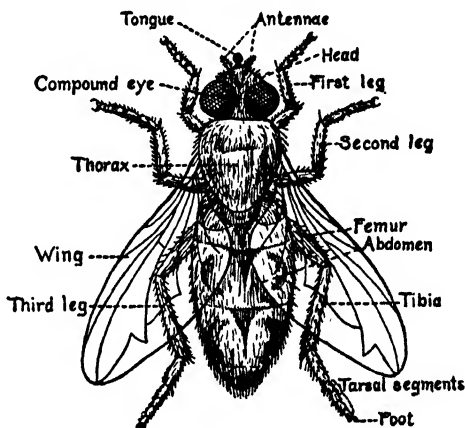
6. Accustom yourself to handling insects without aversion. The teacher who cringes at the appearance of a June bug or screams at the sight of a caterpillar will never succeed in giving lessons on insects, because instinctively the pupils will acquire the teacher's attitude.

7. Begin the lessons with some insect which the children are accustomed to handle, as the grasshopper or butterfly. Proceed from the study of this insect to that of another nearly as familiar and in this way lead the children by easy steps to the study of any insect that you desire to take up.

Parts of an Insect. The accompanying diagram shows the parts of an insect. It should be used in the same manner as the diagram showing the parts of the bird.

1. If possible, procure a number of large flies, so that every pupil in the class can have a specimen. Collect the flies without injuring them before distributing them to the class. If large flies cannot be obtained, the common house fly will answer the purpose.

2. With the specimens in hand, ask the



PARTS OF A FLY

children to observe the three parts into which the body of every insect is divided: head, thorax and abdomen.

3. Next call attention to the other prominent parts: legs, wings, eyes, etc.

How many legs does the fly have?

To what parts of the body are they attached?

Do all insects have the same number of legs?

The answer to this question should be left for the children to discern by examining a number of insects.

Are all the legs the same length?

Can you see any reason for the difference in length?

How many parts has each leg?

Compare these with the parts of your legs.

What sort of a foot does the fly have?

Why can the fly walk upon the ceiling and upon the vertical surface of glass?

How many wings does the fly have?

To what part of the body are they attached?

Do all the wings have the same structure?

Do all insects have wings?

Do all winged insects have the same number of wings?

How do the wings of the butterfly compare with the wings of the fly in size and structure? Use the magnifying glass in finding answer to these questions.

Study the head in the same manner. Lead the children to observe the structure of the eyes and the tongue. Place a drop of molasses or milk where a live fly can get at it, and see how it eats.

Danger from Flies. The practical purpose of the study of the fly is to impress upon the class the fact that this insect is a constant source of danger to health.

1. Ask the class to study the habits of the fly.

Where are flies found in the largest numbers?

On what do they feed?

After the fly crawls over the garbage and other filth what is the condition of its feet?

When one of these insects flies from the garbage to the dinner table, what does it carry?

When this fly crawls over the food what does it leave upon it?

These and similar questions will awaken new trains of thought in the minds of many children who have always considered flies harmless.

2. Attention should be called to the rapidity with which, under favorable conditions, flies multiply.

Where does the fly lay its eggs?

When the eggs hatch, what do they form?

Upon what do the maggots feed?

How long before they become flies?

How many broods will be produced in the summer? See the article Fly.

In connection with these lessons, means of preventing the multiplying of flies and of excluding them from houses should be discussed.

Life History of Insects. Pupils in the older classes should learn how to study the life history of insects. These studies will require a series of lessons extending through the season and frequently through the year. The study may begin with the egg or with the mature insect, but it must continue until the cycle is completed. To illustrate: if the study begins with the mature insect, it must continue until the mature insect of the next brood is produced.

The only way to prevent the damage caused by noxious insects is first, by knowing their life history, and second by knowing how to destroy the existing broods and how to prevent the multiplying of these insects in the future. The Colorado beetle or potato bug, the codling moth and chinch bug and the gypsy and brown-tail moths and the cankerworm are good examples of insects that

should be studied in this way. See articles on these and various other insects in regular alphabetical arrangement in these volumes.

Related Articles. Consult the following titles for additional information:

Ant	Codling Moth	Larva
Antennae	Cricket	Leaf Insects
Ant-lion	Death's-head	Locust
Aphides	Moth	Louse
Army Worm	Dragon Fly	Mantis
Bedbug	Firefly	May Fly
Bee	Flea	Mealy Bug
Beetle	Fly	Metamorphosis
Blowfly	Gnat	Mole Cricket
Bombardier	Grasshopper	Mosquito
Beetle	Gypsy Moth	Moth
Boll Weevil	Hemiptera	Neuroptera
Botfly	Hercules	Orthoptera
Brown-tail	Beetle	Potato Bug
Moth	Hessian Fly	Scale Insect
Bug	Hornet	Scarab
Butterfly	Ichneumon	Scorpion Fly
Cankerworm	Flies	Silkworm
Carpet Beetle	Insecticides and	Stag Beetle
Caterpillar	Fungicides	Termites
Chinch Bug	Jigger	Tsetse Fly
Chrysalis	June Bug	Tussock Moth
Cicada	Katydid	Walking Stick
Click Beetle	Lace-winged	Wasp
Cockchafer	Flies	Weevil
Cockroach	Ladybird	

INSIGNIA, distinguishing marks of authority, office or honor, such as the crown and scepter of a king, the shield and helmet of a knight, the banner of a warrior and the tiara and ring of a pope. Typical and characteristic signs by which the members of any trade, profession or society, or of any civil, military or religious order are distinguished, are also known as its insignia. Of especial importance are the military insignia, which are badges or devices to distinguish the various corps, arms, ranks and grades of military and naval service.

Early Military Insignia. Strictly speaking, the use of the military insignia dates back to ancient times, when troops were distinguished by the devices on their banners and shields; but in the modern accepted sense of the term the military insignia include only the characteristic devices on the uniforms. Such devices, so far as is known, were first used in the Second Crusade, when, to avoid confusion, the French wore a red cross and the English a white cross on the sleeve.

Modern European Military Insignia. Time has wrought notable changes in everything pertaining to the equipment of soldiers. While alterations in uniforms has been most important, distinguishing marks of rank have also changed to less conspicuous designs. Formerly large, fringed epaulets were worn conspicuously on the shoulders of officers, rendering them in their bright-colored clothing excellent marks for the enemy. All nations now dress their soldiers in what might

be termed protective coloration. Marks of rank are worn on small and narrow cloth shoulder-straps of the same material as the uniform. The only exception to this rule are certain badges, mottoes or other devices employed by famous regiments to commemorate valorous incidents in their history. For example, until 1914 the sphinx of Egypt was worn by members of thirty English regiments whose predecessors served in the Egyptian campaign against the French. It is permissible, also, for a soldier to wear whatever medals of honor he may earn by exceptional bravery on the field of battle.

United States Insignia. During the Revolutionary War American soldiers in their uniforms and insignia copied European customs, and these were retained in the War of 1812 and the Mexican War. Many modifications had been effected by 1861, and during the Civil War the most conspicuous insignia had disappeared.

Extremely modest insignia were employed by the time the United States entered the World War in 1917. Of special interest are the distinguishing marks of the various arms of the service. The accompanying illustration shows the designs for the leading branches of the army.

The Story of Insignia. Many people desire to know the significance of the various insignia by which United States officers are designated. From the *Non-Commissioned Officers' Manual* the following extract is taken:

The second lieutenant stands on the level ground, looking up to his superiors at varying altitudes above him. He begins to climb toward the top, his first step being the lower bar of the fence, which position is typified by the one silver bar of the first lieutenant.

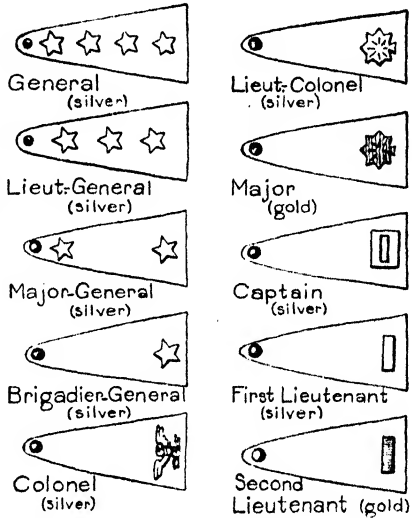
Upon reaching the top of the fence, the officer wears two bars, which represent the bottom and the top bars of the fence, from which point of vantage he can now survey the field. At this stage he is a captain.

From the fence the officer must climb to the branches of the oak, the tree of might and strength. It is a long climb and symbolizes the marked difference that exists between the company and the field officer. The gold leaf on the major's shoulder strap symbolizes this position.

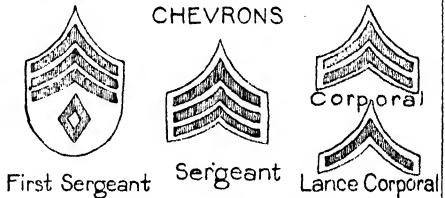
The next step is to the tallest tree of the forest—the straight, towering silver poplar, with no branches for many feet from the ground. Although this point of vantage is somewhat higher than the oak, it is not materially so, and the duties and responsibilities of the position are about the same. The officer is now among the silver leaves of

UNITED STATES ARMY INSIGNIA

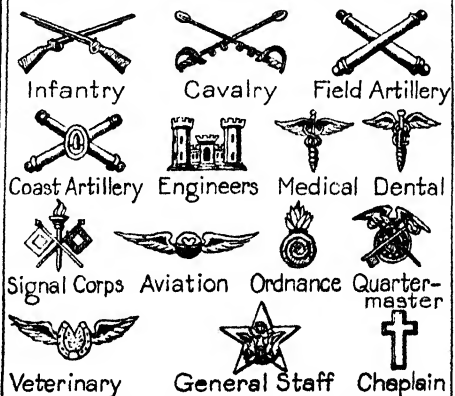
OFFICERS' SHOULDER STRAPS



CHEVRONS



COLLAR DEVICES



the poplar, which fact is typified by the silver leaf of a lieutenant-colonel.

The silver eagle symbolizes the bird that

soars above the top of the towering poplar. This is worn by a colonel.

The next step is the greatest of all: To the stars, up in the firmament, far, far above the eagle's flight, which position is typified by the star on the general officer's shoulder strap.

Officers may wear the regulation cap or the service hat. The branch of the army in which a soldier serves is indicated by his hat cord.

In the United States Navy the following insignia are worn:

1. **Insignia of all naval officers and cadets.** Attached to the front of the cap is a device consisting of a silver shield divided by thirteen upright stripes and with its chief, or upper part, strewn with stars, surmounted by a silver spread eagle, the whole placed upon two crossed anchors in gold.

2. **Insignia of rank.** Rank is indicated by the strips of lace or braid on the sleeve and by the devices on the collar, shoulder marks, shoulder straps and epaulets. The sleeve of an admiral has two strips of two-inch gold lace, with one strip of one-inch gold lace between; a rear admiral, one strip of two-inch gold lace, with one strip of half-inch gold lace above it; a captain, four strips of half-inch gold lace; a commander, three strips of half-inch gold lace; a lieutenant commander, two strips of half-inch gold lace, with one strip of quarter-inch gold lace between; a lieutenant, two strips of half-inch gold lace; a lieutenant (junior grade), one strip of half-inch gold lace with one strip of quarter-inch gold lace above; an ensign, one strip of half-inch gold lace; staff officers, the same as for line officers with whom they rank, except that bands of colored cloth are placed between the strips of lace; naval cadet, one strip of quarter-inch gold lace; chaplain, lustrous black braid of the same size and disposition as for line officers of the same rank. The device on the collar, shoulder marks and epaulets is the same for each rank as that on the shoulder straps. See Uniform.

INSOLVENCY, in law, the legal status of any person who is unable to pay his debts. In the United States the term is used commonly in distinction to bankruptcy, an insolvent person being unable to pay all of his debts and a bankrupt person being unable to pay any considerable part of them. Insolvency and bankruptcy are both regulated by Federal laws, and these are amended from time to time. See **BANKRUPT**.

INSOMNIA, or **SLEEPLESSNESS**, a condition caused by excitement, exhaustion, intoxication, grief or any other emotional disorder. As persistent insomnia has led to nervous prostration and even suicide, it is treated as a serious ailment by physicians.

Removal of the cause is the first step in combating insomnia; warm baths, fresh air and massage are also helpful. The practice of taking drugs to induce sleep is one that cannot be too strongly condemned.

INSTINCT, a complex response determined by inherited constitution.

A homing pigeon if taken many miles away and then released will fly back to its cote. A child on hearing a loud sudden noise will run to its mother. A man on being insulted gets red in the face, clenches his fists, and finds it hard to keep from fighting the one who angered him. Such types of behavior have always been difficult to explain; so the theory was put forward that animals and human beings have instincts, which cause characteristic automatic responses to certain types of situations. It was supposed that as these responses did not have to be learned, and were not controlled by intelligence or changed by experience, they were inherited.

Many psychologists today do not believe that there are any such instincts. They say instead that there are *reflex actions* of a simple kind, such as pulling the hand away from fire, reaching out for an object and putting it in the mouth, and kicking away tight clothes. There are *emotions* such as joy, fear, anger, and love. Both emotions and reflexes are inherited, but they are not instincts in the old sense.

A child from the earliest moments of life is learning to develop its reflexes by exercise. It is not very long before these reflex responses become complicated by emotional behavior brought about by its mother or nurse. Repetition of these emotionally colored complex responses tends to fix them into habits.

The modern disbelief in inherited instincts places a greater responsibility upon early training for the development of proper patterns of behavior. See **PSYCHOLOGY**.

INSTITUTE OF FRANCE, a name given to several learned societies united into one body under the patronage of the French government. At present these societies are the following:

(1) The French Academy, organized by Cardinal Richelieu in 1635, devoted to literature. Its members are often called the Forty Immortals. They have in their hands the distribution of many valuable prizes for literary excellence.

(2) The Academy of Inscriptions, founded in 1663, devoted to the study of ancient inscriptions.

(3) The Academy of Sciences, founded in 1666, for the promotion of mathematics, physics, chemistry, astronomy and other sciences.

(4) The Academy of Fine Arts, founded in 1648, devoted to music, painting, sculpture and architecture.

(5) The Academy of Moral and Political Science, founded in 1795, suppressed in 1803, but restored in 1832, given to the discussion of psychology, history, finance, law and political economy.

Each has a fostering care over some art or science, the interests of which it promotes in numerous ways, notably by offering prizes for progress or excellence of production in its field. A small salary is allowed each member. Each Academy has its own officers and its own funds, while the collections and libraries are enjoyed in common. The general fund is in charge of a committee of eleven, comprised of two from each society, and the Minister of Education, who acts as chairman.

INSTRUMENTAL MUSIC, music produced by instruments, as distinguished from *vocal music* (see SINGING). The art of arranging the parts of a composition for orchestra is known as *instrumentation*. It is of rather recent origin, even Bach and Handel having but elementary ideas upon the subject. The importance of a thorough knowledge of instrumentation is manifest, for a chord which, sounded by some instruments, would produce exquisite harmony, sounded by others would be discordant. The greatest masters of instrumentation have been Haydn, Mendelssohn, Mozart, Beethoven, Weber, Wagner, Brahms and Tchaikowski. The art is also called *orchestration*. See ORCHESTRA.

INSULATOR. Carefully-shaped pieces of glass are placed between wooden posts and the telegraph, telephone, or electric wires which they support. The current of electricity in the wires will not pass through the glass because glass offers too great resistance for the current to overcome. If some such substance were not used, the electric current would travel to the earth and be lost.

Examination of a spark plug in an automobile motor will show that the metal part of the plug which transmits the electric current is enclosed in porcelain. Porcelain holds the current to its course.

Both glass and porcelain are *electrical*

insulators, substances through which electricity can not readily pass.

In a similar way, the term *insulator* is applied to materials such as cork and asbestos, which are poor conductors of heat. The walls of modern homes, of refrigerators and of ovens contain heat insulators.

INSULIN, a serum remedy for diabetes. See DIABETES.



INSURANCE, in *shoor'ans*, in law, as defined in the statutes, is "a contract by which one party, for an agreed consideration (which is proportional to the risk involved), undertakes to compensate the other for loss on a specified thing, from specified causes. The party agreeing to make the compensation is usually called the insurer, or underwriter; the other, the insured, or assured;

the agreed consideration, the premium; the written contract, a policy; the events insured against, risks or perils, and the subject, right or interest to be protected, the insurable interest."

Kinds of Insurance. If the risk is fire, the system of insurance is known as *fire insurance*; if the risk is connected with navigation by sea, the insurance is known as *marine insurance*; if it is accident of any kind, explosion, breakage, destruction or the loss of future earnings, it is *accident insurance*; if the event is death, the insurance is called *life insurance*.

Insurance companies are of two kinds, *proprietary* or *stock* companies, which have a certain capital stock and which establish such rates or premiums as not only will cover expected losses, but will provide a reasonable profit or interest upon the capital invested; and *mutual* companies, in which the policy-holders are also the stockholders, and the rates or premiums are fixed at just that amount which will pay for the losses to be incurred and for the management of the company, the profits, if any, being returned to the policy-holders in dividends. Familiar examples of this kind of insurance companies are the so-called "friendly societies" or "fraternal societies," such as the Odd Fellows or the Modern Woodmen of America.

Some of the largest insurance companies in the world, however, besides the fraternal societies are also organized on this basis.

Fire Insurance. In fire insurance the contract by which insurance is undertaken establishes certain rights and duties upon each party. The underwriter promises specifically or by implication to indemnify the insured to a certain specified extent, and thereby guarantees that the insurance company will endure as long as the contract of insurance runs; that the risks which it undertakes shall be selected with careful regard to quality, quantity and exposure; that the premiums charged shall be adequate to afford a profit which shall make the insurance secure, and that its funds shall be guarded against wasteful or dishonest expenditure or investment.

The insured in signing his applications, answers a series of questions, and if at the time of loss it can be shown that he has misrepresented or untruthfully answered any of these questions he is entitled to no indemnity. It is customary for insurance companies to classify the risks against which they insure in certain orders, known as ordinary, hazardous and extra-hazardous, the rates charged being apportioned accordingly. It is especially important that the insured state truly the class under which his property should fall. Repairs and alterations on the premises insured, if they do not affect the character of the risk, do not invalidate the policy, but the insurance companies should usually be notified of such changes. Courts generally are inclined to construe insurance policies liberally on behalf of the insured, and unless fraud can be shown, damage resulting from fire, even though due in part, and in some cases in whole, to the negligence of the insured or his servants, must be indemnified by the insurance company. It is customary for insurers to stipulate that they may rebuild or repair the premises if they choose, instead of paying for the loss.

It has become the rule that heat alone does not create liability on the part of the insurers unless there be actual fire; so a loss by lightning is not held to be a loss by fire unless the property be destroyed by flames occasioned by the lightning. On the other hand, loss occasioned by direct efforts to put out a fire, as by water, or a loss sustained by removing insured goods from

the peril of fire or of tearing down or blowing up a structure to stop the progress of a conflagration, would fall on the insurers, provided the steps taken were reasonable and necessary. Marine insurance is largely governed by the same principles as fire insurance, with such modifications as the nature of the property and of the risks necessitates. The same is true in regard to accident insurance.

Life Insurance. Life insurance originated in the desire of a man to provide for a helpless or dependent family after his death. It has now, however, entered the field of investment, and policies are written whose main object is the safe-keeping and increase of funds. Three classes of policies are most common in the United States, those known as *life*, or *straight life*, policies, *term-payment* policies and what are called *endowment* policies. Each of these classes has been varied in innumerable ways, in order to meet the demands of different classes of persons. For instance, in taking out a life policy the person may agree to pay a certain amount annually as long as he lives, the company agreeing to pay a certain amount at his death to his heirs or to some specified beneficiary. He may make annual payments for a term of years, as ten, fifteen or twenty, and then pay no more, the company promising that at his death a certain amount shall be paid to his heirs or beneficiaries. Or he may pay a certain amount once for all, with the understanding that at his death a certain amount will be paid to his heirs or beneficiaries. In the endowment policy the insurance company agrees to pay at the end of a certain term if the insured is alive, or before that, in case of his death, a certain amount. In both classes of policies the premiums are determined on the same basis, that is, the insured pays enough each year to the company, so that at the end of the given time the accumulation of his premiums and of a low rate of interest upon them will equal a certain amount, which the insurance company then agrees to pay to his beneficiaries. Life insurance upon either of these plans is therefore exactly opposite to the principle governing the payment of annuities (see **ANNUITY**).

The premium to be paid either upon life policies or upon an endowment policy is regulated in accordance with a mortality or insurance table, compiled from the experience of many companies in accordance with the

law of probabilities and the law of averages (See MORTALITY, LAW OF). In accordance with this table the company can determine approximately what proportion of persons insured at a given age will die each year until the whole number have died; that is, they can determine the average number of years that persons at a given age will live. Therefore, if the company agrees to pay a certain amount at a certain person's death, it will fix the premium which that person shall pay annually until his death at such an amount that if he died at the time that the average person of his age will die, he will have paid to the company enough, with the accrued interest, to equal the face of the policy.

Sick and Accident Benefits. Another kind of insurance is aimed to protect the individual in a monetary way against the hazards of accident and sickness. Injuries occurring in any manner, except in specified extra-hazardous cases in which it is not necessary to expose one's self, assure the victim of weekly payments as long as disability continues, up to a specified time limit. Sick-benefit policies guarantee insurance payments of specified amounts, usually with a maximum time limit stated. Many corporations take advantage of what is termed group insurance; they insure all of their employees of insurable age against the hazards of accident and sickness, the policies often including life insurance benefits; sometimes the company assumes the entire financial burden, sometimes it is shared by the insured.

Compulsory Insurance. In connection with the hazards of employment in industry, many states have passed laws making workmen's compensation compulsory when employment is stopped because of injuries received when on duty. This form of insurance is described in the article EMPLOYER'S LIABILITY.

Automobile Insurance. Owners of motor vehicles may purchase insurance against most of the hazards of driving. Policies are issued to them guaranteeing certain payments for the hazard of fire which may damage or destroy their cars, also for theft of cars which cannot be recovered. Also, owners may insure against damage to their cars or to cars of other owners with which they crash in collisions, in what are called property damage policies; they may protect themselves further against claims for personal injury or death to one or two persons through collisions in which their cars are involved.

Other Forms of Insurance. Against professional or business hazards many kinds of insurance are offered. A dancer may insure her legs, a toe-dancer her toes; a pianist may insure hands against injury; a merchant planning a special offering on a certain day may be insured against loss of sales should inclement weather keep people away from his store.

Soldiers' and Sailors' Insurance. This is a form of government insurance, designed to compensate soldiers and sailors, and their families, for injuries and death incurred in government service. It was inaugurated in the United States after the country entered the World War. The act providing for such compensation was passed in October, 1917. It provided for insurance in multiples of \$500 for sums between \$1,000 and \$10,000. Premiums were payable monthly, and ranged from sixty-five cents per \$1,000 at age twenty-one to \$1.20 at age fifty-one. Holders of policies were permitted to retain them for five years after leaving the service, and the law provided that not later than five years after the termination of the war as declared by Presidential proclamation, the insurance could be converted into ordinary life, endowment or other form of insurance.

INTENSIVE FARMING, a term denoting that policy in agriculture by which every acre on a farm is made to produce to its utmost in quantity and quality. In other words, the man who farms intensively gets everything possible out of all the land he possesses. In some countries if intensive farming were not practiced the population would always be hungry. The Chinaman terraces his small two-acre hillside and plants foodstuffs on every available square foot. In Europe small farms are the rule, and no ground capable of producing is left uncultivated.

Not only does intensive farming mean the utilization of ground, but it includes keeping it in a high state of fertility by liberal use of all available fertilizing agents. No waste that will serve as fertilizer is destroyed, but is returned to the soil that production may be stimulated. European acres that have been cultivated for a thousand years are thus kept more fertile than much of the newer North American lands. Belgium raises nearly twice as many bushels of grain on every acre as is raised in Canada or the United States in the same area.

Land in Europe, where there are from 200 to 650 people to each square mile, cannot be treated as carelessly as in Canada and the United States, where vast domains yet await the plow and the harrow.

INTEREST, a sum paid for the use of money. The sum to be paid as interest should always be stipulated at the time the

ent states, but it is six per cent in thirty-four states. The highest rate is twelve per cent, legal in six states. If agreed to in the contract, a higher rate may be exacted in six of the states. Any rate in excess of the legal rate is known as *usury*. The rates established by law in the various states appear in the following table:

STATE	LEGAL RATE	BY CONTRACT	STATE	LEGAL RATE	BY CONTRACT
Alabama	8	8	Montana	8	*
Alaska	8	12	Nebraska	6	9
Arkansas	6	10	Nevada	7	*
Arizona	6	8	New Hampshire	6	*
California	7	12	New Jersey	6	6
Colorado	8	*	New Mexico	6	10
Connecticut	6	12	New York	6	6
Delaware	6	6	North Carolina	6	6
Dist. of Columbia	6	8	North Dakota	8	8
Florida	8	10	Ohio	6	8
Georgia	7	8	Oklahoma	6	10
Idaho	6	8	Oregon	6	10
Illinois	5	7	Pennsylvania	6	6
Indiana	6	8	Rhode Island	6	12
Iowa	6	8	South Carolina	7	8
Kansas	6	10	South Dakota	6	8
Kentucky	6	8	Tennessee	6	6
Louisiana	5	*	Texas	6	10
Maine	6	6	Utah	8	12
Maryland	6	*	Vermont	6	6
Massachusetts	7	7	Virginia	6	6
Michigan	6	8	Washington	6	12
Minnesota	6	8	West Virginia	6	6
Mississippi	6	8	Wisconsin	6	10
Missouri	6	8	Wyoming	7	10

* Any rate on which both parties may agree.

money is borrowed, as must also the date on which the sum borrowed is to be returned to the lender. Unless the interest rate is named, the legal rate only can be collected. The document attesting the contract between lender and borrower is usually a *note* (which see).

The money loaned is called the *principal*; the ratio of the interest for one year to the principal is the *rate*, or *rate per cent*; the sum of any principal and its interest together is the *amount*. Interest is either simple or compound. *Simple interest* is that which is allowed upon the principal only, for the whole time of the loan. *Compound interest* is that which arises from increasing the principal at fixed periods by the interest then due, and from that time forward till the end of the next period, obtaining interest upon this amount. In other words, in compound interest, interest due is added to the principal, and on both principal and interest further interest is paid.

How Much Interest May Be Charged. The *legal rate* of interest is that rate per cent which the law declares shall be the maximum interest charged, in default of other understanding. This varies in differ-

Interest Methods. The method of computing interest that is most widely used is called 6% method. Arithmetics usually explain only in brief from the philosophy of this method.

Six Per Cent Method. It may be well here to outline the philosophy of the 6% method.

In all interest computations 360 days are assumed to be one year. If the interest on \$1.00 for one year is \$.06, it is clear that for one month the interest on \$1.00 would be one-twelfth of \$.06, or one-half cent, or \$.005. If for one month or 30 days the interest on \$1.00 at 6% is \$.005, then it is clear that the interest for 6 days is \$.001. If the interest is \$.001 for 6 days, for 1 day it would be \$.0004. Now, let us put the above analysis in tabular form for quick reference:

Interest on \$1.00 for 1 year.....	.06
Interest on \$1.00 for 1 month.....	.005
Interest on \$1.00 for 6 days.....	.001
Interest on \$1.00 for 1 day.....	.0004

Let us apply the above to the following problem: What is the interest for 2 years, 6 months, 24 days, on \$500.00, at 6% per annum?

Interest on \$1.00 for 2 years is.....	.12
Interest on \$1.00 for 6 months is.....	.03
Interest on \$1.00 for 24 days is.....	.004

Interest on \$1.00 at 6% for 2 years, 6 months, 24 days, is.....\$.154

If the interest on \$1.00 at 6% for 2 years, 6 months, 24 days, is \$.154, the interest on \$500.00 will be 500 times \$.154, or \$77.00.

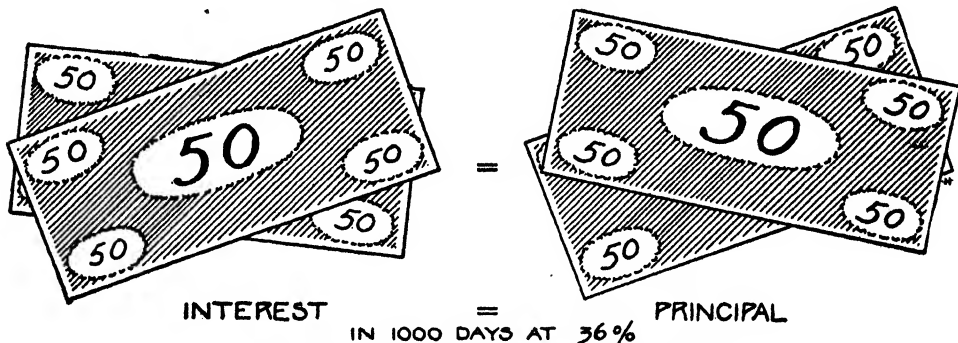
In the above problem, if the interest were 8% instead of 6%, we would find the interest first for the full time at 6%. As 8% is $\frac{2}{3}$ more than 6%, we would add $\frac{2}{3}$ to the interest on \$1.00 at 6%, and find that the interest on \$1.00 for 2 years, 6 months, 24 days, at 8%, is \$.205 $\frac{1}{3}$, after which we would multiply this interest on \$1.00 by the principal.

Should the interest be 7%, we would first find the interest on \$1.00 for the given time at 6%, divide this by 6, which would give us the interest on \$1.00 for the given time at 1%; then multiply by 7, which result would be the interest on \$1.00 for the given time at 7%.

The Thousand Day Method. But few people know of the existence of a brief method of computing interest, known as the thousand

Solution. 2 years, 2 months, 20 days equals 800 days. Pointing off three places, we have the interest on \$1.00 for the given time at 36%. Multiplying the interest on \$1.00 by the number of dollars, the product is \$198.864, which is the interest on the whole amount for 800 days at 36%. We require the interest at 9%, which is one-fourth as much as 36%. Therefore, dividing \$198.864 by 4, we find the interest on \$248.58 for 2 years, 2 months, 20 days, at 9%, to be \$49.716.

INTEREST, in psychology. Why are you reading this article? For some reason or another you must be interested in psychology. If you read the one above, you would



ILLUSTRATING THE THOUSAND DAY METHOD

day method. This is one of the few methods not complicated, and it has the virtue of clearness. Next to the 6% method it is recommended as the best, for no other system of computing interest excels the thousand day method in simplicity and perfect adaptation to nearly every problem. The theory of this method may be stated as follows:

The simple interest of any sum of money will exactly equal the principal in 1000 days at 36%.

Before proceeding to learn a rule by which to solve a problem under this method, find the interest on \$100.00 for 1000 days at 36%, by the six per cent method. You will find this interest to be \$100.00. You can now without doubt write your own rule for the thousand day method. It is as follows:

Multiply the principal by the number of days, point off three decimal places in the product, and the result is the interest on the principal for the given time at 36%.

If your problem requires the interest at 6%, divide the result by 6.

If 3% is required, divide by 12;

If 4% is required, divide by 9;

If 9% is required, divide by 4;

If 12% is required, divide by 3;

If 1% is required, divide by 36;

If 10%, multiply the interest at 1% by 10.

Below is a solution of a problem by the thousand day method. Find the simple interest at 9% upon \$248.58 for 2 years, 2 months, 20 days.

be thought to be interested in money matters. If you read the one after, you are interested in government. Interest may be defined as the frame of mind which causes a person to spend time on subjects.

You may have a permanent interest in something such as baseball, or stamp collecting, or carpentry. This will cause you to seek friends who have similar interests, to spend money on magazines, to read the sports pages of the newspapers, etc. This you do deliberately, perhaps even make it your special interest, your life work. Whenever your eye or ear is "caught" by mention of your interest in a paper, on the radio, in a shop window, or in your neighbor's conversation, your attention immediately swings to it. Thus interest is basically necessary to attention and it is very hard to concentrate attention on something which is not interesting. Attention is necessary to learning and so many psychological factors depend upon interest.

There are some interests which are just temporary, interest in currently popular games, entertainments, or authors. These are usually taken up because they promise

pleasure, but when the pleasure fades the interest dies.

Arguing from this, it used to be thought that interest in a subject depended entirely upon the pleasure that is derived. To a very large extent this is still true but the modern view is that interests are determined by happenings in early childhood. They then persist throughout life, with only minor changes.

If your father was a plumber, you might, even if you became a lawyer, still be interested in plumbing. If your mother had her way so that you are a lawyer, whereas you wanted to be a school teacher, you will still be interested in schools, and this interest will show up sometime in your life, if it was a real one.

All children take interest in something. "The most careless and inattentive boy in school is not without interest, not even without attention. The trouble is he is interested in wrong things." Parents and teachers can do much in directing the child's interest by seeing that he is surrounded by proper associations.

Because interest is so important it is very necessary that when a young boy is choosing his life work it should be related to his permanent interest. This can be found by having him fill out an interest test form, such as has been made by Professor E. K. Strong, Stanford University, California.

See, in the order named, **PSYCHOLOGY, ATTENTION, THOUGHT, WILL.**

INTERIOR, DEPARTMENT OF THE, one of the executive departments of the United States government, whose head, the Secretary of the Interior, is appointed by the President and is a member of his Cabinet.

The department is charged with the supervision of public business relating to the public lands and surveys, the General Land Office, Indian affairs, the Geological Survey, the National Park Service, and the Capitol building and grounds. The Bureau of Reclamation is in this department, also the Office of Education. The Secretary is charged with the care of certain hospitals and eleemosynary institutions in the District of Columbia. He has general supervision of the government railway in Alaska. The administration of the Virgin Islands is also in charge of this department.

The salary of the Secretary of the Interior is \$15,000 per annum.

INTERJECTION, *in ter jek'shun*, a part of speech used to express sudden or intense feeling, such as joy, surprise and disapproval. Grammatically, the interjection is independent of the rest of the sentence, and dropping it does not make the sentence unintelligible. At the same time, its elimination might change the entire tone of the sentence, and take away its force and vividness. For example, "Hurrah! the parade is moving," has quite a different effect from "The parade is moving." Such words as *oh*, *alas*, *bravo* and *pshaw* are always interjections, but nearly every word may be so used. An expression used for emphasis at the beginning of a sentence, as in the following, serves as an interjection: "To arms! the foe is upon us." "Away! the time has come for us to depart."

INTERLAKEN, *in'tur lah ken*, a Swiss summer resort, twenty-six miles southeast of Berne, beautifully situated near the left bank of the Aar, between the lakes Thun and Brienz. The name is applied to a plain containing three villages, Aarmühle, Matten and Unterseen. An old monastery building dating from the twelfth century houses a hospital, government offices and an auditorium used for religious services. The delightful climate and beautiful scenery of Interlaken draws to it annually in normal times from 20,000 to 50,000 tourists. Population, about 4,000.

INTERMEZZO, *in tur met'so*, a short musical piece, generally of a light, sparkling character, played in slow tempo between the parts of a more important work, such as an opera or a composition in the sonata form. Originally intermezzos were short musical divertissements performed between the acts of a tragedy. The most popular intermezzo of the present day is probably that in *Cavalleria Rusticana*.

INTERNAL-COMBUSTION ENGINE, See GAS ENGINE.

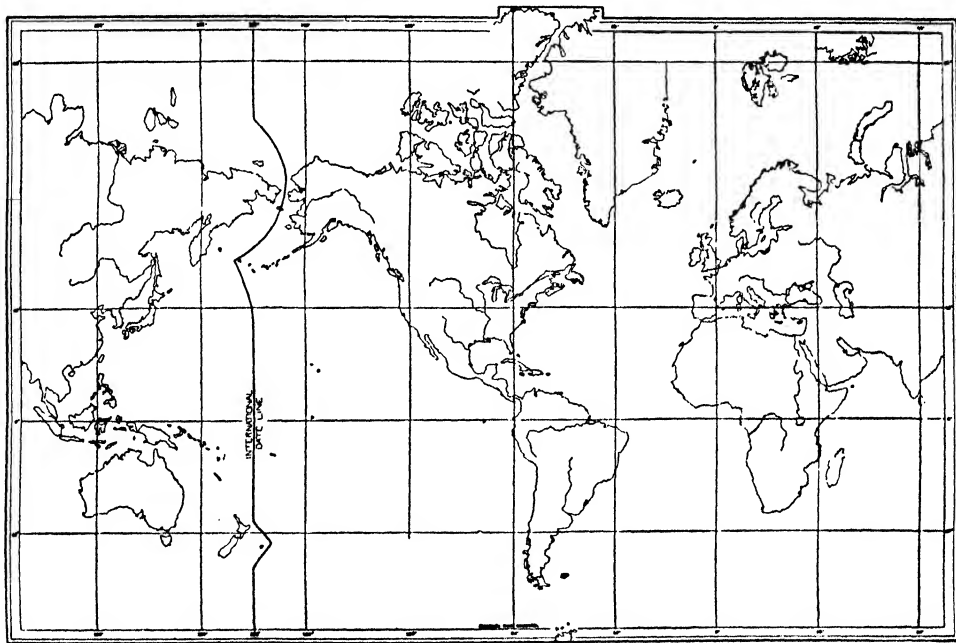
INTERNAL REVENUE. Expenses of national governments are defrayed by duties levied upon imports from other countries and by taxation. In the United States the Federal government may lay direct taxes upon all the people, but it has never done so except in three periods of stress—in 1798, 1812 and 1861. Import duties have always been of vast extent, but taxes have also been levied upon articles made within the country. Taxes so assessed are called *internal*

revenue taxes. Alcoholic liquors and tobacco have always been taxed, and the revenue from these has been very large. At various times taxes have also been placed upon many other articles, as oleomargarine, matches, playing cards, bank checks and all legal papers, and other commodities people are sure to use and which therefore are certain to be productive of revenue. The extent to which internal revenue taxes are laid depends upon national necessities.

In Canada and England such taxes are called *inland* revenue. See **INCOME TAX**.

INTERNATIONAL DATE LINE. When it is Monday where you live, is it Monday on all parts of the earth's surface until the day

directly overhead and it would still be noon with you, on Sunday. In another hour you would have traveled 30° , yet it would still be Sunday noon. In another hour you would have gone 45° from home and it would still be Sunday noon, for you are keeping with the sun. Continuing at this rate around the world you would find upon returning to the place from which you started that it is still noon on Sunday, so far as your reckoning is concerned. But would it be still Sunday noon to the people you had left behind and to whom you have gone back? No. There would be a difference of 24 hours in time. People will tell you that it is then Monday noon. Somewhere in your travel with the sun the



INTERNATIONAL DATE LINE, SHOWING CHANGES IN DIRECTION

changes to Tuesday at your home? You will readily see that such is not the case, for all people cannot reckon the beginning of their day from your meridian. We may understand, therefore, that there is a certain line drawn in imagination on the earth's surface where the date changes.

Suppose we imagine that on Sunday noon you are able to leave your home and travel westward with the sun and with the same rapidity, keeping the sun directly over your head all the time. In one hour you would have traveled 15° , but the sun would still be

time instantly changed from Sunday to Monday. Had you asked of native peoples in the progress of your journey the day of the week, you would have been told, even as far west as the Sandwich Islands, that it was Sunday; but a little beyond that point, as you neared the coast of Asia, you would have been told that it was Monday. Through all of Asia and entirely through Europe people would have declared that the hour was Monday noon, although during the entire trip it was continually the same day and the same hour of the day to you—Sunday. If you had wished to

be in accord with the people among whom you were traveling, you would have had to change your day from Sunday to Monday, somewhere along the route.

It is customary for mariners to change their day at a point exactly halfway around the world from Greenwich, on the given meridian. This is 180° east or west of Greenwich. However, to run a straight line arbitrarily north and south 180° east or west from Greenwich would prove a great inconvenience in some portions of the world, so the line is run crooked in places to accommodate all of the islands of one group on one side of the line rather than to divide them. For instance, the Aleutian Islands, off the coast of Alaska, are partly east and partly west of the 180th meridian. If the international date line were drawn exactly north and south from pole to pole, it might run midway of one of these islands and one little fur-clad native might be living in Thursday while with his neighbor over the hill the day might be Friday. Therefore, the date line deviates from its direction due north and south and moves southwest until those islands are passed, when again it turns straight south to the equator, then it moves east about 45°, thence south about 30°, thence with a slight variation to the southwest. This international date line is imaginary, and authorities do not absolutely agree as to its location. It is evident that no necessity compels an arbitrarily fixed line, but all are in accord as to its general position and direction. See **LONGITUDE AND TIME**.

INTERNATIONALISM, a term referring to relations between groups of persons in two or more nations. The spirit of internationalism is closely linked with the belief in the brotherhood of man. Aside from any governmental interests, many people want to co-operate with citizens in foreign lands and establish such organizations as the International Association for Social Progress, the International Institute of Agriculture, the Universal Christian Conference on Life and Work, the Committee on World Friendship Among Young People, the Institute of International Relations, the League of Red Cross Societies, and many others.

Governments set up international organizations for the purposes of gaining information or executing some enterprise of wide interest and value; such are the conferences on finance, banking, wheat production, health, fisheries, education, and numerous other im-

portant subjects. The nations go yet further in establishing confederations, federations, alliances, treaties, compacts, and "understandings." In such cases, the agreements often take the form of binding legal contracts.

Such organizations as the Permanent Court and the League of Nations show how the development of organized democracy has led to the suggestion that mankind establish the world state composed of federated nations.

Related Articles. Consult the following titles for additional information:

International Law	Peace Conference
League of Nations	Red Cross Societies
Pan-American Union	Treaty

INTERNATIONAL LAW, the unwritten law or agreements between nations; those rules or maxims which independent countries observe, or ought to observe, in their conduct toward one another. International law is divisible into two parts, that which regulates the rights, intercourse and obligations of nations, as such, with one another; and that which regulates the rights and obligations more immediately belonging to their respective subjects or citizens. Thus, the rights and duties of ambassadors belong to that head which respects the nation in its sovereign capacity; and the rights of the subjects of one nation to property situated within the territory of another nation, belong to the latter head. Some of the maxims regarding the rights and duties of nations during a state of peace are the following:

(1) Every nation is bound to abstain from all interference with the domains of other nations.

(2) All nations have equal and common rights on the high seas, and they are not bound to admit any superiority there. The sea which washes the coast of a nation is, to the extent of three miles from shore, now deemed to be a part of the territory of the nation, over which it may exercise an exclusive jurisdiction. And, in respect to persons subjected to its laws, every nation now claims a right to exercise jurisdiction on the high seas, for the purpose of enforcing both international law and its own municipal regulations.

(3) No nation has a right to pursue any criminal or fugitive from justice in a foreign country; its claim, if any, is a mere right to demand him from the nation in which he has taken refuge.

(4) Every nation has a right to regulate its own intercourse and commerce with other nations.

(5) Foreigners are bound to obey the laws of a country as long as they reside within it and under its protection; and the property held by foreigners within a country ought to

be protected in the same manner as that of natives.

(6) Every nation has a right to send and to receive ambassadors and other public ministers; the persons of such ministers are held sacred and inviolable, and their property, servants and retinue enjoy a like privilege.

Changes Caused by War. War introduces an entirely new order of rules. The right of declaring war results from the right of a nation to preserve its own existence, its own liberties and its own essential interests. In a state of nature men have a right to employ force in self-defense, and when they enter into society this right is transferred to the government. What are just causes for entering into a war is a question which has been much discussed by publicists. Defensive wars are necessarily justifiable, from the fact that they involve the existence or safety of the nation and its interests. But offensive wars are of a very different character, and can be justified only in cases of aggravated wrongs or vital injuries. The first effect of a declaration of war is to put the subjects of one nation into a state of hostility to those of the other nation. The property belonging to one is deemed hostile by the other. If it be personal property it may be captured as a prize; if lands, they may be seized and confiscated at the pleasure of the government; if it be merely in debts of stock it may, in the extreme exercise of the laws of war, be equally liable to confiscation. As soon as a battle is over, the conquerors are bound under international law to treat the wounded with kindness and the prisoners with a decent humanity; a nation violating this rule debases itself. And there are some things which seem positively prohibited, from their cruelty and brutal barbarity; such are the torturing of prisoners, the poisoning of wells, the use of inhuman instruments of war. In the World War (1914-1919) charges of open and continued violation of such humane provisions, based on direct observation, were made at various times.

In time of war there is occasionally intercourse between the belligerents, which should be held sacred. Such intercourse includes the interchange of prisoners, the temporary suspension of hostilities, the passage of flags of truce, the engaging in treaties of capitulation. When any conquest of territory is made, the inhabitants pass under the dominion of the conqueror and are subject to such laws as he chooses to impose upon them, which, however, must be humane.

There are also certain rights which war confers on the belligerents in respect to neutrals. Thus, they have a right to blockade the ports or besiege the cities of their enemies and to interdict all trade by neutrals with them. But no blockade is to be recognized unless "the besieging force can apply its power to every point in the blockaded state." Belligerents have a right also to insist that neutrals shall conduct themselves with good faith. A neutral nation is bound to observe entire impartiality between the belligerents, but it has a right to insist upon carrying on its ordinary commerce with each of the belligerents in the same manner as in times of peace.

Related Articles. Consult the following titles for additional information:

Blockade	Red Cross Societies
Nations, League of	War
Neutrality	World War

INTERNATIONAL PEACE CONFERENCE. See PEACE CONFERENCE, INTERNATIONAL.

INTERSTATE COMMERCE ACT, a popular name for a law passed by the United States Congress in 1887 to regulate commerce between the states. It grew out of the rapid development of railways and the abuses which arose from sharp competition among them. Under the law all common carriers, either by rail or water, are prohibited from granting unreasonable preferences to individuals or localities; from agreeing to pool the traffic (See TRUSTS) and to divide the profits; from concealing any rates, or from changing them without due notice. A commission of five members was created to hear complaints, make investigations of violations of the law and require reports from carriers. The law accomplished much good in regulating abuses and standardizing many policies; in order to broaden its work and increase its effectiveness the membership of the Commission was increased to eleven members, and the personnel of its force was strengthened. Amendments to the original law have brought railroads more intimately within the control of the Commission; particularly, the Commission is empowered to set aside unjust freight rates and to declare what are reasonable rates in all cases brought to its attention. The salary of each commissioner is \$10,000 per year; the term of each member is six years. The commission is an independent body, being subject only to the control of the Congress of the United States.

INTESTACY, in *tes'ta sy*, in law, the condition of a person who dies without having left any will, or who leaves one not legally valid. In such case the property is disposed of according to a rule fixed by law. In the case of a person dying partially intestate, that is, without disposing of *all* his property, the property not included in the settlement goes to the next of kin or to the heir-at-law, according as it is real or personal.

Related Articles. Consult the following titles for additional information:

Estate	Real Property
Personal Property	Will

INTESTINE, a muscular tube which receives food from the stomach and serves as an organ of digestion and elimination. It is composed of the *small* and the *large* intestines, the former varying in width from two inches to an inch and a third, and the latter from two and one-half inches to one and one-half. The small intestine is about twenty feet long. It is doubled into a mass that occupies the central part of the abdominal cavity; at one end it joins the stomach, and at the other, the large intestine. Physiologists apply the term *duodenum* to the first ten or twelve inches of this intestine, and the names *jejunum* and *ileum* to the remainder (see illustration accompanying the article ABDOMEN). The special function of the small intestine is to continue the digestion of food received from the stomach (see DIGESTION).

The large intestine, which is about five feet long, extends nearly around the small intestine. It is made up of the *caecum*, the *colon* and the *rectum*. The small intestine joins the large on the right side of the abdominal cavity, at the point where the colon begins. Through the muscular movements of this portion of the large intestine waste matter is pushed into the rectum, from which it is expelled from the body. When its movements are sluggish the condition known as constipation results, and harmful bacteria accumulate in the body (see CONSTIPATION). The vermiform appendix, inflammation of which causes appendicitis (which see), is a small tube extending from the caecum. Other diseases having their seat in the intestine are typhoid fever, hookworm, dyspepsia and cholera. Each of these is treated under its proper heading.

INTOXICATION, a term for drunkenness. See ALCOHOLISM.

INVALIDES, *aN va leed'*, HOTEL DES, an establishment in Paris where poor and infirm veterans of the French army are cared for at the expense of the state. The building, erected by Louis XIV, between 1670 and 1673, can accommodate 6,000 men. In vaults under the splendid dome lie the bodies of Napoleon I, Turenne and several other great French commanders.

INVENTION, in *ven'shun*, a device or contrivance containing some idea not before developed by man. The nations which produce the highest type of inventive genius take the leading rôle in world development. Governments recognize the stupendous importance of encouraging men to apply their special talents in perfecting new devices. In the Constitution of the United States (Art. I, Sec. 8) Congress is empowered—

To promote the progress of science and useful arts, by securing for limited times, to authors and inventors, the exclusive right to their respective writings and discoveries.

The means taken to assure inventors the permanent benefits from their labors to which they are justly entitled are described in the article PATENT.

History, in the broadest sense of the word, has been defined to include "everything that has happened." A nation's progress is measured by many factors—by its territorial expansion, by governmental development, by social and industrial growth. At first glance a table of great inventions and discoveries may seem to have no place in history; yet it is true that all inventions have exercised some influence, whether direct or indirect, on the progress of nations. Few realize that growth of slavery as an institution was due largely to the impetus given cotton growing by the invention of the cotton gin. Not many of us are conscious every day of our lives that the great internal development of the United States would have been impossible without the railroad, steamboat and the telegraph. Many people still living can appreciate the difference that the telephone and the telegraph have made in the development of the United States. If telegraph and cable systems had been in use in 1815 the Battle of New Orleans would never have been fought, for the treaty of peace had already been signed.

Among the most vital inventions of the world are the following:

DISCOVERY OR INVENTION	DATE	DISCOVERER OR INVENTOR	REMARKS
Books Printed from Movable Type...	1450	Johannes Gutenberg...	An invention which did more to end the Dark Ages and to further the spread of knowledge than any other before or since.
Telescope.....	1609	Galileo.....	Galileo is given credit for this invention, because he made the first practical instrument. This invention opened a new field in astronomy.
Submarine Boat....	1775	David Bushnell.....	As developed by later inventors, this invention has resulted in the construction of a new type of war vessel; its practical uses have already been demonstrated.
Power Loom.....	1784	Cartwright.....	Has revolutionized the cloth-making industry.
Cotton Gin.....	1793	Eli Whitney.....	The cotton gin reduced the labor of separating the fiber from the seed; made the American cotton industry possible, and through it enabled this country to supply a large part of the cotton used in the world.
Steamboat.....	1807	Robert Fulton.....	Revolutionized transportation on the water; made definite time schedules possible for boats, and has reduced the time for crossing the Atlantic from several weeks to less than one week.
Locomotive.....	1825	Stephenson.....	The first American-built locomotive was made in New York; without the development of railway building the enormous expansion of the United States would have been impossible.
Reaping Machine ..	1834	C. H. McCormick....	This machine is doubtless the most useful of agricultural inventions. It reduced the labor of harvesting to such an extent as to make possible the great farms in the grain-growing regions of the world.
Vulcanizing Rubber	1837	Charles Goodyear....	The discovery that the addition of sulphur renders rubber elastic, waterproof, and unchangeable in texture has been responsible for the application of rubber to hundreds of new uses.
Friction Matches...	1837	John Walker.....	The introduction of this invention has been of untold benefit to every civilized nation.
Telegraph.....	1837	Alonzo Phillips.....	
		S. F. B. Morse.....	Made possible almost instant communication between distant points. Its influence upon commerce is beyond measure.
Screw Propeller....	1839	John Ericsson.....	This device perfected the steamboat and changed the plan of ocean steamers, resulting ultimately in the modern ocean liner.
Submarine Cable....	1842	S. F. B. Morse.....	This is but another application of the telegraph. Its use practically brings all parts of the world together, making it possible to communicate within a few minutes with points thousands of miles away.
Sewing Machine....	1845	Elias Howe.....	This machine was to the manufacture of clothing what the reaper was to the harvesting of grain. It made the factory system of manufacturing clothing possible.
Cylinder Printing Press.....	1847	Robert Hoe.....	This form of press has made possible the rapid printing of newspapers and magazines in large quantities at low cost.
Gatling Gun.....	1861	Richard Gatling.....	The adoption of the rapid-fire machine-gun has revolutionized modern warfare.
Typewriter.....	1868	Chas. L. Sholes.....	The typewriter is an important invention for business purposes. Its use has practically changed the methods of correspondence and greatly systematized the office methods.
Gas Engine.....	1876	Otto.....	A forerunner of the superb motors of modern automobiles.
Telephone.....	1876	Alex. G. Bell.....	The telephone has made it possible to converse at long distances. In a great measure it has taken the place of the telegraph, and in cities and towns has become indispensable to the transaction of business.
Phonograph.....	1876-88	Edison.....	Originally merely a toy and a diversion, the phonograph is now of great commercial importance; various forms are in use as dictating machines and other appliances in daily business use.
Incandescent Electric Light.....	1879	Edison.....	The perfection of this invention and its commercial development have made possible easy regulation of the quantity of light.
Steam Turbine.....	1884	Parsons and De Laval.....	The application of the steam turbine to steamships in 1897 revolutionized marine transportation.
Kinetoscope.....	1893	Edison.....	The invention of this apparatus was an important step in the development of moving pictures.
Wireless Telegraph ..	1897	Marconi.....	Marconi was the first to demonstrate the practical uses of wireless telegraphy. His system is now in use in all parts of the world, and has become especially valuable for communication with vessels at sea.
Flying Machine....	1903	Wright Brothers.....	The swiftest vehicle known; the most wonderful step in the evolution of transportation.
Radio.....	1915	Developed by many...	Has carried the human voice 10,000 miles

INVERTEBRATES, *in ver te braytz*, or **INVERTEBRATA**, *in ver te bra'tah*, animals which have no backbone or spine. While there is no well defined boundary-line between vertebrates (animals with backbone) and the invertebrates, the latter may roughly be classified as embracing the lowest divisions of animal life, the protoza, sponges, sea anemones, corals, jelly-fish, worms, insects, shellfish and such. See **ZOOLOGY**.

INVOLU'TION, raising a quantity to an assigned power; the opposite of evolution. See **ARITHMETIC**.

IO, in Greek mythology, the daughter of Inachus, beloved by Zeus, who, to protect her from the jealousy of Hera changed her into a beautiful white heifer. She was given into the care of the hundred-eyed Argus, from whom she was rescued by Hermes. Then Hera sent a gadfly to torment her,

and Io, pursued, wandered to Egypt, where she was changed back to her original form.

IODINE, *i'od'in*, or *i'od'ine*, a bluish-black solid element used in medicine, in photography and in the manufacture of dyes. It was discovered by a French manufacturer in kelp, the ashes of seaweed, in 1812, and for a long time seaweeds continued to be the most important source of this element. At present, however, the greater part of the commercial supply is obtained in Chile as a by-product in the purification of sodium nitrate, or Chile saltpeter (see **NITRATE**). Other sources are ocean water, the water of mineral springs, sea plants and sea animals.

At the ordinary temperature of the atmosphere iodine is a solid crystalline body. Its vapor is of an exceedingly rich violet color, a character to which it owes its name, which comes from the Greek word for *like a violet*. It has an extremely acrid taste, and its odor resembles that of chlorine. It is an irritant poison, but in small doses it has been of great service in goiter and other glandular diseases. In the form of compounds, such as iodide of potassium, it has been found of great benefit in goiter, scrofula, rheumatism and other diseases, as well as in cases of lead poisoning. Iodine is not usually given internally, but as a disinfectant and destroyer of parasites it is freely used externally.

IODOFORM, *i'o'doh'form*, a chemical compound of iodine, carbon and hydrogen. It is a yellowish, crystalline substance, which dissolves in ether or alcohol. In medicine it is used as an antiseptic and disinfectant and is a cure for certain ulcers and sores. It gradually decomposes under the action of light. Iodoform has a very disagreeable odor, which is sometimes neutralized by adding to it musk or camphor oil. There are several methods of manufacturing it. It may be produced by subjecting to electrolysis a solution of potassium iodide and alcohol in water with a current of carbonic acid gas passing through the solution.

IOLA, KAN., the county seat of Allen County, 110 miles southwest of Kansas City, on the Neosho River and on the Missouri Pacific, the Atchison, Topeka & Santa Fé and the Missouri, Kansas & Texas railroads. The industries include cement works, foundries and machine shops, creameries, dresses, brick and tile. The city is in the

heart of the natural gas region of the state. There is a Federal building, a courthouse, a Carnegie Library and an airport. The place was settled in 1857, was chartered as a city in 1898. Its prosperity dates from the discovery of vast quantities of natural gas in its vicinity. There is commission government. Population, 1930, 7,160.

IONIA, that part of the seaboard of Asia Minor which was inhabited by Ionian Greeks, a beautiful and fertile country opposite the islands of Samos and Chios, which were included in it. According to tradition, the Greek colonists came over from Attica about the middle of the eleventh century B. C. and founded twelve towns, which, though mutually independent, formed a confederacy for common purposes. Commerce, navigation and agriculture rendered them wealthy and flourishing, but the country lost its independence and successively was tributary to Croesus, Cyrus, Alexander and the Roman emperors. It was later totally devastated by the Saracens, so that few vestiges of its ancient civilization remain.

IONIAN ISLANDS, a number of Greek islands in the Ionian Sea, extending along the western and southern shores of Greece. The surface is mountainous, but there are fertile plains in some of the islands. The staple exports are oil, currants, valonia, wine, soap and salt, and the few manufactures are chiefly textiles and ornaments. These islands belonged to Venice from the Middle Ages to the nineteenth century; in 1814 they were organized into a republic and placed under the protection of Great Britain. By consent of the European powers they were annexed to Greece in 1864. Population, 270,000.

IONIANS, *i'o'ni'ans*. See **GREECE**; **IONIA**.

IONIC, *ion'ik*, **ORDER**. See **COLUMN**.

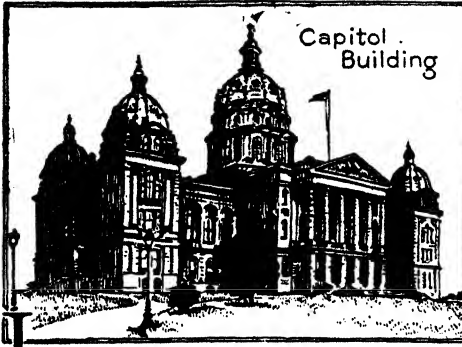
I. O. U., an expression standing for "I owe you," and applied to a statement of a debt, the form commonly accepted of which is as follows:

Chicago, January 1, 1945.

John Doe, I. O. U. \$50.

Richard Roe.

Though it is not the equivalent of a promissory note (which see), in that it contains no statement of a promise to pay, it has been made legally a promissory note in certain states of the Union. In those states failure to pay a debt recorded in this form makes the signer liable to lawsuit, as in case of ordinary notes.



IOWA, one of the foremost states in the American Union, although there are twenty-three that are larger and eighteen that have greater populations. It lies between the Mississippi and the Missouri rivers, with Minnesota on the north and Missouri on the south. The state is rich in agricultural resources, and it has important though comparatively small coal fields. The prosperity of the people is evidenced by the fact that automobiles are in more general use in proportion to the population than in most other states.

The popular name of Iowa is **THE HAWKEYE STATE**, suggesting the watchfulness of the hawk, formerly a bird familiar to the people of the state. Iowa was admitted to the Union as the twenty-fifth state in December, 1846. Its total area is 56,147 square miles and the population, in 1930, was 2,470,939, an average of 44.5 to the square mile. This is one of the few states in which the population is increasing very slowly.

Surface and Drainage. The surface of most of the state is what is generally known as rolling prairie, consisting of long, low swells, separated by broad shallow valleys. About three-fourths of the state slopes gently to the southeast. The average elevation is about 1,100 feet, the highest point being in the northwest corner, with an altitude of almost 1,700 feet; the lowest point is in the southeast corner, which has an altitude of about 500 feet. The rivers have broad valleys which are bordered by lines of bluffs. In the northern part there are occasional hills which rise above the general surface.

The Des Moines, the largest river, flows across the central part of the state in a southeasterly direction. About two-thirds of the state is drained into the Mississippi, and aside from the Des Moines the streams of importance in this drainage area are the

Iowa, Cedar, Skunk, Wapsipinicon and Turkey rivers. The western portion of the state is drained into the Missouri by the Big Sioux, the Little Sioux, the Nodaway, and the East and West Nishnabotna rivers. The northwestern counties are a continuation of the lake region of Minnesota and contain a number of lakes noted for the beauty of their scenery and their clear water. The most important of these are Spirit Lake, East and West Okoboji, Clear Lake and Storm Lake. There are similar lakes in several counties.

Climate. Iowa has a cool, temperate climate, with a wide range of temperature between the extremes of summer and winter. In July and August the thermometer may register 100°, while in the midwinter it occasionally falls as low as 40° below zero. In the northern part of the state the snowfall is often heavy. The atmosphere is somewhat humid, and the climate is generally healthful. The average annual rainfall is 32 inches.

Mineral Resources. The middle and southern sections of the state are underlaid with coal; this area extends northwesterly to near the central counties, though the mining area is confined to the valley of the Des Moines River in a district of about 19,000 square miles. Most of Iowa's mined coal is consumed within the state. Cement production almost equals coal in value—an average of about \$10,000,000 worth being produced annually. There were once valuable deposits of lead ore in the vicinity of Dubuque. Clay suitable for brick and tile is very generally distributed over the state, and clay suitable for pottery is also abundant. In value the clay products exceed \$5,000,000 each year. In Webster County, in the center of the state, there is a large deposit of gypsum, valuable for making stucco (see **GYPNUM**; **PLASTER OF PARIS**). Limestone and building stone are also distributed over the state. However, with the exception of coal and gypsum, the mining industries are comparatively unimportant. The total annual value of minerals averages about \$35,000,000.

Agriculture. Iowa has a lower percentage of waste land than any other state. Nearly the entire state is covered with a deep, rich soil, free from stones and is easily tilled. There are practically no forest areas, the timber being confined to narrow belts along the streams. These conditions, combined with its thriving population, have made Iowa

one of the leading agricultural states in the Union. Since 1890, in each year Iowa has ranked either first or second in grain production. Corn is the chief crop, and about one-third of the tillable area is planted to this cereal each year. The annual crop is over 400,000,000 bushels, giving Iowa the first place among corn-growing states. It is also first in the production of oats, Minnesota being second. Hay, clover, wheat and barley are grown in smaller quantities. Crops of apples, grapes, cherries and other fruits are very abundant.

The state contains vast areas of grass lands for pasturage and the growing of hay. This, with the large crops of corn and other cereals and with an abundance of pure water, especially adapts Iowa to stock raising. In this branch of agricultural industry Iowa is exceeded only by Texas; 7 per cent of the nation's cattle are grown in Iowa. In the number of horses raised Iowa ranks first. The state raises annually over 10,000,000 hogs, more than are raised in Illinois and Nebraska combined. Annual sheep production amounts to 1,000,000. The dairy industry is of such magnitude as to place Iowa in the front rank as a dairy state. Creameries are numerous, and large quantities of butter are made in the homes. Iowa is exceeded only by Wisconsin, Minnesota and New York in the number of milch cows.

Manufactures. Iowa ranks high among the states in manufacturing, being exceeded only by five states west of the Mississippi. Its manufactured output approximates \$900,000,000 annually. Meat packing is Iowa's greatest industry, the state ranking fourth with products valued at \$244,000,000. The state ranks second in butter production; while corn products, dressed poultry, canned corn, and breakfast foods are important. Since 1914 Iowa has produced from one-eleventh to one-seventh of the nation's gypsum products. Iowa ranks second to New York in the pearl button industry and produces nearly one-half of the nation's output in washing-machines. Calendars, fountain pens, pumps, harness, farm machinery and planing mill products constitute important industries.

Transportation and Commerce. The Mississippi and the Missouri once afforded the chief means of transportation, but the construction of many lines of railway and the obstructions to navigation, such as snags and

shallow water, make those streams of less importance. In 1927 the Federal Government established barge line service on the Mississippi; the Missouri is navigable to Sioux City for small boats. Trunk lines of railway extend across the state from east to west and these are connected by numerous cross lines. As most of these cross lines have constructed spurs wherever the traffic would warrant, every county in the state has one or more railway lines passing through it, and nearly every town is within a few miles of a railway station. Thus with almost 10,000 miles of tracks transportation facilities are adequate and convenient for all industries. Iowa has about 4,000 miles of paved roads and some 20,000 miles of graveled roads. These afford splendid highways for the upwards of 700,000 automobiles and the scores of common carriers engaged in trucking and passenger transportation. Iowa is also crossed by the main trans-continental airways, and by five important bus lines.

The commerce of the state is large; it consists in the export of grains, live stock, meat, butter, poultry products, and some manufactures, and the import of manufactured goods and foodstuffs that cannot be profitably produced within the state.

Fishermen laboring at night on the waters of the Mississippi in their flat-bottomed boats gather huge quantities of mussel shells to be used in the manufacture of pearl buttons. Occasionally fresh-water pearls of great value are caught. These commodities are no small feature of Iowa's commerce.

Government. The legislative department consists of a senate, restricted to fifty members elected for four years, and a house of representatives of 108 members, elected for two years. The senators are divided into two classes, the term of approximately one-half their number expiring every two years. The executive department consists of a governor, a lieutenant-governor, a secretary of state, an attorney-general, a treasurer, a secretary of agriculture, an auditor and a superintendent of public instruction. The term of all state officers is two years, excepting the last named, whose term is four years. The judicial department consists of a supreme court, composed of nine judges, elected for six years; twenty-one district courts, each district having from two to six judges, elected for four years; municipal and superior courts; justice courts, and police courts.

Education. Iowa maintains an excellent system of public schools, and its percentage of illiteracy is very low, being only 0.8 per cent. The schools are supported almost wholly by local taxation. The public lands given by Congress to the state for the support of schools were sold in pioneer days at a very low figure, largely from \$1.25 to \$5.00 per acre, and consequently the state fund is small. The highest officer is the superintendent of public instruction; the schools of each county are under the supervision of a county superintendent.

The state institutions of higher learning include the state university at Iowa City, the state college of agriculture and mechanic arts at Ames and the state teachers college at Cedar Falls. The three institutions are managed by a state board of education established by the legislature in 1909 to displace three separate boards. These institutions are among the best in the United States.

There are numerous colleges and secondary schools of high grade maintained by the various religious denominations. Important among these are Upper Iowa University at Fayette, Grinnell College at Grinnell, Cornell College at Mount Vernon, Iowa Wesleyan College at Mount Pleasant, Central College at Pella, Penn College at Oskaloosa, Luther College at Decorah, Coe College at Cedar Rapids, Parsons College at Fairfield, Drake University at Des Moines, Simpson College at Indianola, Morningside College at Sioux City, St. Ambrose College at Davenport, the University of Dubuque, Clark College and Columbia College at Dubuque.

Institutions. There is a soldiers' orphans' home at Davenport and a soldiers' home at Marshalltown. The state maintains a college for the blind at Vinton, a school for the deaf at Council Bluffs, a juvenile home at Toledo and a home for feeble-minded children at Glenwood. The hospitals for the insane are at Mount Pleasant, Independence, Cherokee and Clarinda. A hospital for epileptics is conducted at Woodward. The state penitentiary is at Fort Madison and the men's reformatory at Anamosa; a woman's reformatory is at Rockwell City. There is an industrial school for boys at Eldora and one for girls at Mitchellville. These are all under the board of control of state institutions, excepting the schools for the blind and deaf, which are managed by the state board of education.

Items of Interest on Iowa

Iowa is almost equally distant from the Atlantic and the Pacific Oceans and is about midway between the North Pole and the equator.

Vladivostok, Salt Lake City, Chicago, New York, and Istanbul are all in the same latitude as parts of Iowa.

The highest point in Iowa is near Primghar, 1,800 feet above sea level.

In Iowa the winds from the west and northwest are generally cool and dry, while those from the east and south are warm and bring rain.

In the value of its horses and hogs, as well as in the total value of all domestic animals, Iowa leads all other states. Iowa produces twice as many hogs as any other state.

One of the finest gypsum deposits in the United States is near Fort Dodge.

Iowa has exceptionally developed transportation facilities: no point in the state is distant more than thirteen miles from a railroad, and but three states in the Union have a greater railroad mileage.

Although preeminently agricultural, Iowa's urban population exceeds its rural population.

The annual production of butter is over two hundred million pounds.

Questions on Iowa

How does Iowa compare with Wisconsin, New York and Rhode Island in area? In population?

How does Iowa rank in the value of crops produced? In the value of corn, oats, hay, fruits?

What is the most important mineral deposit?

Name the leading manufacturing industries.

What can you say about Iowa's transportation facilities?

Name the important colleges or universities.

What provisions has Iowa made for the care of dependents and defectives? For the education and training of delinquent children?

For whom was Dubuque named?

Cities. There are in Iowa twenty-one cities each having more than 10,000 inhabitants. The capital and largest city is Des Moines; the next six, in order of size, are Sioux City, Davenport, Cedar Rapids, Waterloo, Council Bluffs, and Dubuque.

History. Iowa was once the abode of the Sioux, Winnebago, Mascouten, Iowa, Illinois, Sac and Fox Indian tribes. In 1673 Marquette and Joliet entered the territory, but no attempt at permanent settlement was made until 1788, when a French Canadian, Julien Dubuque, commenced mining lead in the vicinity of the city now bearing his name. In 1803 the United States gained possession of the territory by the Louisiana Purchase, and thereafter Iowa formed a part, in turn, of the territories of Louisiana, Missouri, Michigan and Wisconsin, until 1838, when it was organized as Iowa Territory. A few years before, settlements had been established at Fort Madison, Dubuque and Burlington. After considerable agitation the constitution was revised and the state was admitted to the Union in 1846. Des Moines was chosen as capital. Immigrants arrived in great numbers and its growth was rapid until the outbreak of the Civil War. There have been two constitutions; the first was adopted in 1846 and was replaced by the second one in 1857.

Iowa has experimented with various forms of liquor control. A prohibitory law which went into effect in January, 1916, in advance of national prohibition, was repealed in 1933 to be replaced by a combination of license and government sale. The nineteenth amendment to the United States Constitution gave women the right to vote, indeed, but an amendment to the state Constitution passed in 1926 permits them to hold office as members of the General Assembly.

Related Articles. Consult the following titles for additional information:

GEOGRAPHY

Boone	Iowa City
Burlington	Keokuk
Cedar Rapids	Marshalltown
Clinton	Mason City
Council Bluffs	Mississippi River
Davenport	Missouri River
Des Moines	Muscatine
Des Moines River	Oskaloosa
Dubuque	Ottumwa
Fort Dodge	Sioux City
Fort Madison	Waterloo

HISTORY

Amara Society	Louisiana Purchase
Fox (Indians)	Sac
Iowa (Indians)	Sioux
	Winnebago

IOWA, UNIVERSITY OF, a coeducational institution, founded at Iowa City in 1847, and formally opened in 1855. From 1858 to 1860 only a normal department was maintained, but a reorganization on a broader basis was effected in 1860. The university is composed of nine colleges: liberal arts, graduate, law, medicine, dentistry, pharmacy, engineering, education, commerce; five schools: fine arts, letters, journalism, religion, nursing. It has also an extension division, a division of physical education, a child welfare research station and a summer session that offers most of the courses of the regular year.

The university now has about 50 buildings, situated on a campus of 386 acres on the banks of the Iowa River. The buildings are grouped artistically about the "Old Capitol," the corner stone of which was laid on July 4, 1840. In normal years the university has a student enrolment of over 9,000 and a faculty of about 600. There are 500,000 volumes in the various libraries on the campus.

IOWA, a tribe of Indians, the remnants of which are now living in Kansas and Oklahoma on reservations, but which early in the eighteenth century inhabited Minnesota and that region to the south which is now the state of Iowa. They number fewer than 300.

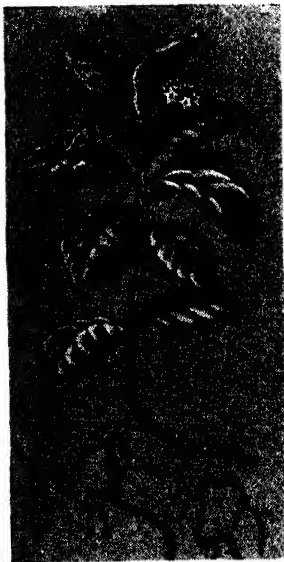
IOWA RIVER, a river in Iowa, rising in Hancock County. It flows in a southeasterly direction and enters the Mississippi thirty-five miles north of Burlington. It is 300 miles long, and is navigable to some degree for small boats to Iowa City, eighty miles from its mouth.

IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS, a coeducational institution established at Ames in 1858, which has developed into one of the foremost technical and industrial colleges in the United States. Besides the agricultural department, which has admirable facilities for teaching practical farming, the institution maintains departments of mechanical, civil, electrical and mining engineering, veterinary medicine, home economics, industrial and economic science, and a department of manufacturing industries. In normal years the faculty numbers more than 480 and the student body over 5,000. There is a library of 115,000 volumes. The college has property valued at \$8,000,000, including a farm of 1,200 acres.

IPECAC, *ip'e kak*, a medicinal substance of a nauseous odor and a repulsive, bitterish

taste. It is the dried root of several kinds of plants growing in South America, which bear the name *ipecacuanha*.

The active principle of ipecac is called *emetine*. The medicinal preparation is a white odorless powder, which in small doses causes violent vomiting. It has been found useful in treating bronchitis, croup and other diseases where an expectorant is needed, and in treating disorders in which it is desired to stimulate the activity of the skin, as in small and repeated doses ipecac stimulates the secreting organs of the skin.



IPECACUANHA

IPHIGENIA, if i je ní'ah, in Greek legend, the daughter of Agamemnon and Clytemnestra. Agamemnon, by killing a hind sacred to Diana, had so enraged that goddess that she detained at Aulis the fleet which was prepared to sail against Troy, and when the oracles were consulted as to means of gaining favor with the goddess, they replied that Agamemnon must sacrifice his daughter. Iphigenia was accordingly sent for on the pretext that she was to be married to Achilles, but when she arrived at Aulis she was delivered to the priests to be sacrificed. As she was about to be killed, she was caught up by Diana in a cloud and carried to Tauris, while a hart was left in her place. At Tauris she became priestess of Diana, and here her brother Orestes found her.

IRAN, e rah'n', the ancient and the present name of Persia (which see).

IRAQ, e rahk', formerly historic Mesopotamia, was part of the Asiatic territory belonging to Turkey that was captured by British troops during the World War. It had been a part of the Turkish Empire for centuries. The Treaty of Sevres, forced on Turkey in 1920, established nearly all of

Mesopotamia as an independent country, to which the name Iraq (also spelled Irak) was given. Until able to maintain itself economically and politically, the League of Nations assigned to Great Britain a governing mandate. In 1927, by treaty, the two countries established Iraq as a constitutional monarchy; it applied to the League of Nations for membership, and was admitted in the autumn of 1932.

The soil of Iraq is made fertile in most sections by irrigation, though some parts are naturally adapted to cultivation. The winter crops are wheat and barley. The greatest riches of the country lie in its vast oil fields; the town of Mosul, in the north, is the center of production. A great pipe line has been constructed from the oil area westward to the Mediterranean Sea; there is no other outlet for this product except through rail to the Persian Gulf at Basra. The railroads, 753 miles in length, run practically north and south, connecting Mosul, Baghdad, and Basra. Airlines connect Baghdad with Cairo, London, and Calcutta.

Great historic interest attaches to Iraq, for according to tradition it was the home of the revered patriarchs of the Bible. It has an area of 116,600 square miles, and a population of 2,900,000. The old historic and romantic vilayets (provinces) of Mosul, Baghdad, and Basra comprise the state; it lies between Persia and Arabia on the east and west, and from north to south stretches between Turkey and the Persian Gulf. The sovereign power of the king is limited by the Constitution and a representative assembly. The king is Ghaza (born 1912), son of the first king, Faisal, who was elected in 1921 and died in 1933.

IRAWADI, ir a wah'di, or **IRRAWADDY**, (originally Erivarti, the "Great River"), the largest river of Burma, traversing the country from north to south, rises on the Burma-Assam border, and flows into the Bay of Bengal from a deltaic belt 150 miles wide and 1,168 miles from its source. Its principal affluents are the Chindwin and the Bhamo, and the principal mouths of the delta area are the Rangoon and Bassein rivers. The deltaic area of 20,000 square miles is covered with teak forests and interspersed with paddy fields; timber and rice therefore are the chief exports of Burma. A railroad parallels the river and crosses it at Mandalay.



An aged Irish pair

IRELAND, the beloved ERIN of Irishmen throughout the World, is the smaller of two islands which once comprised the United Kingdom of Great Britain and Ireland. It has another poetic name — EMERALD ISLE—bestowed with reference to its velvety-green vegetation. Erin was the name used in early days, when the Irish war cry, "Erin go bragh" (Erin forever), called the tribes to battle. A

certain picturesque phase of Ireland has been presented to everyone through the songs, plays and stories that are full of references to the shamrock, Erin's national flower; the harp, whose silencing betokens the decline of national glory; the River Shannon, the beautiful lakes of Killarney, and the legend of Saint Patrick.

There is another phase of this small island of a more serious aspect, one that has brought its name into political discussions in many quarters of the globe. Though for centuries politically attached to England, Ireland has always been seething with discontent, and no matter where its sons and daughters emigrated, they carried with them the passionate longing of the people at home for severance of the existing political ties. Not all of Ireland desired independence, or even Home Rule, for Northern Ireland is intensely loyal to the British Empire; but the protest raised by their opponents brought about a political division of the island into the Irish Free State and Northern Ireland.

Location and Size. Ireland is separated from the island of Great Britain, to the east of it, by the Irish Sea, and is surrounded on all other sides by the Atlantic Ocean. With an area of 32,586 square miles, it is a little smaller than the state of Maine and sixteenth in size among the islands of the World. Measured diagonally, the greatest length, from Mizen Head in the southwest to Fair Head in the northeast, is 302 miles; its breadth through the center, between Dublin and Galway bays, is 110 miles.

Surface and Drainage. The coast, forming a line of nearly 3,000 miles, is, in general, bold and rugged and has numerous in-

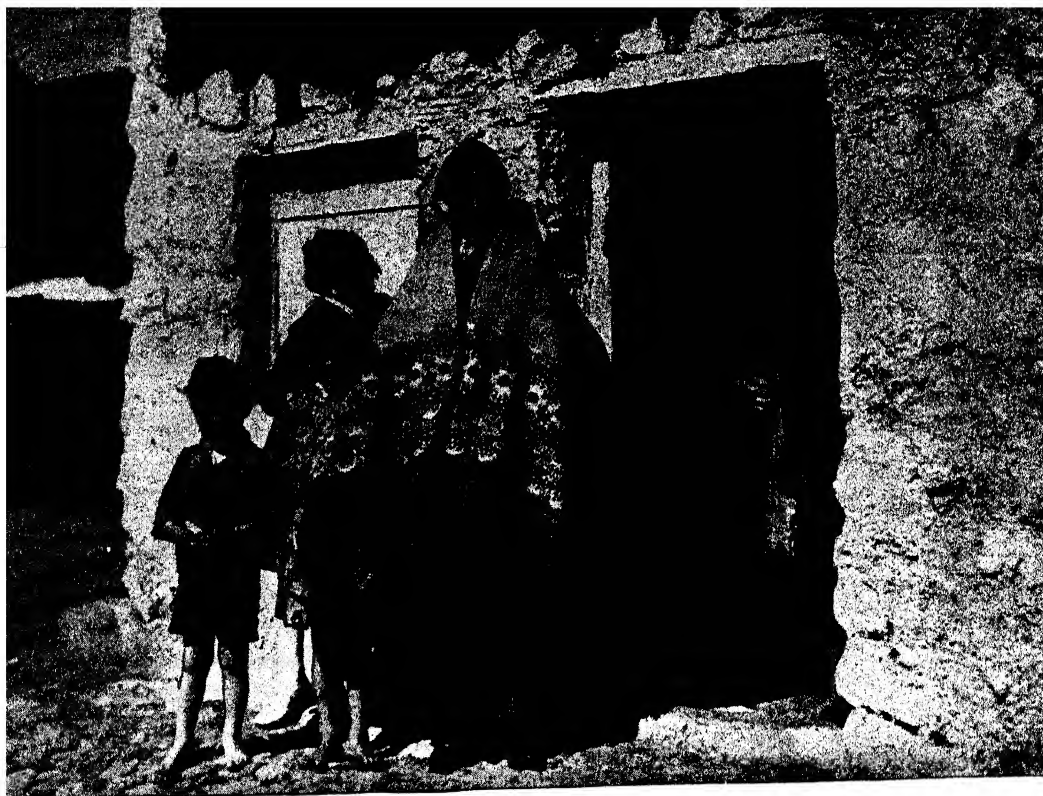
dentations, some of which run far into the land and form excellent natural harbors. There are a number of islands, chiefly on the west coast, the largest being Achill. The mountains, generally speaking, rise in isolated masses at a short distance from the coast, the interior having the form of a vast plain, in which are extensive tracts of bog. The Macgillicuddy's Reeks, in the southwest, are the highest land, the culminating summit being Carranta Hill, 3,414 feet. The mountains of Wicklow, in the southeast, reach a height of over 3,000 feet.

Rivers are not only numerous, but are very equally distributed over the surface. The Shannon, in the west, the largest river of Ireland, if not of the United Kingdom, is navigable to its source in Lough Allen, forming a waterway of 240 miles. The other rivers of most importance are the Bandon, the Lee, the Blackwater, the Suir and the Barrow, which enter the sea on the south, the last two by the union of their waters forming the broad estuary of Waterford harbor.

The lakes, or loughs, of Ireland are numerous, and in Lake Neagh the island possesses the largest lake in the British Isles. It is situated in the northeastern part of the country, and has an area of 158 square miles. The Lakes of Killarney, famed in song and story, are in a picturesque region in the southwest.

Climate. The climate is on the whole more moist, milder and more equable than that of the greater part of Britain. It is highly favorable to vegetation and allows many delicate plants to winter in the open air; some species of plants grow in Ireland but nowhere else in the British Isles, as, for instance, the strawberry tree or arbutus, found in the southwest. See GREAT BRITAIN, subhead *Climate*.

The People. The greater number of the inhabitants are descendants of the ancient Celts, who occupied the island at the time of the Roman conquest of Great Britain. The people are known as Irish, and their language, a branch of the Celtic tongue, is used quite generally by the country people; English, however, is the prevailing language in towns, is the official language and is spoken to some extent and quite generally understood by all. The Irish people are noted for their kindness, industry and wit. Thousands of them have emigrated to other coun-

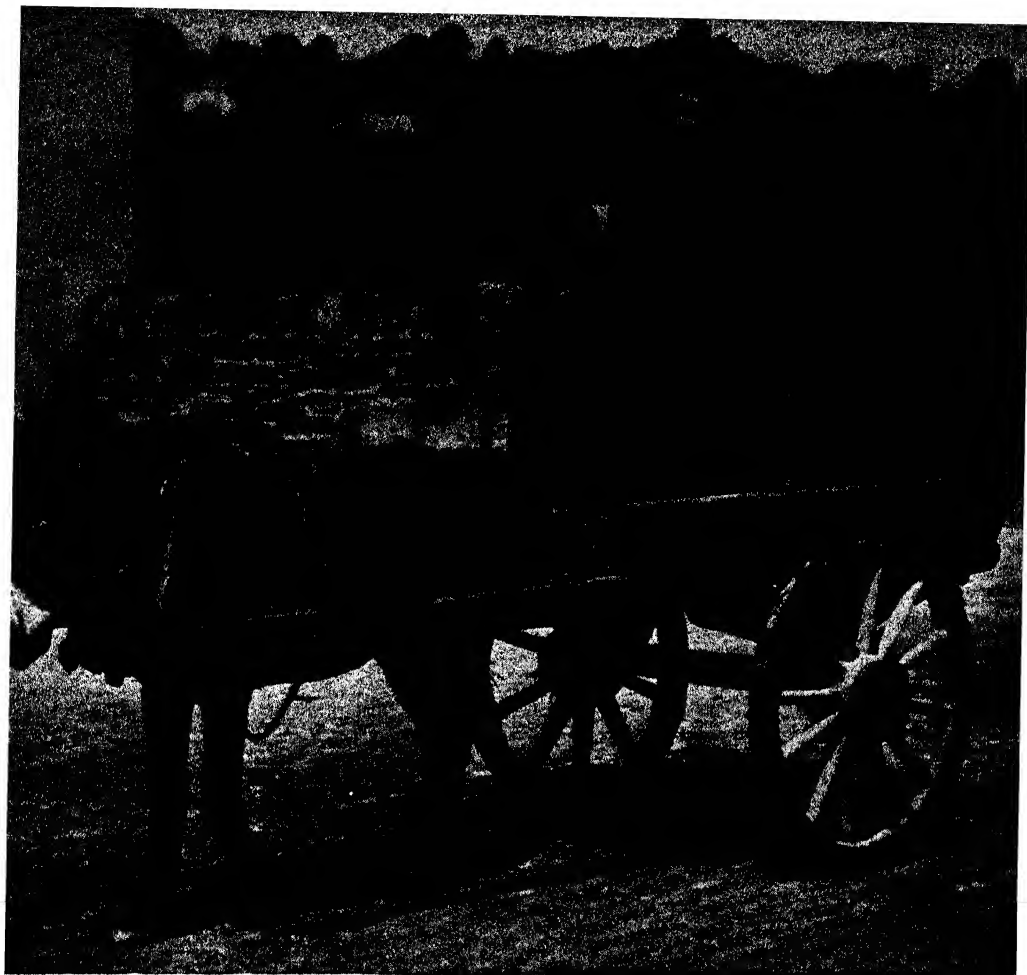


TYPICAL OF OLD IRELAND

Above, thatched house of a fisherman's family that to its members is "home, sweet home." Below, a Dublin square, showing Parnell monument and a statue of him by St. Gaudens.

Ewing Galloway

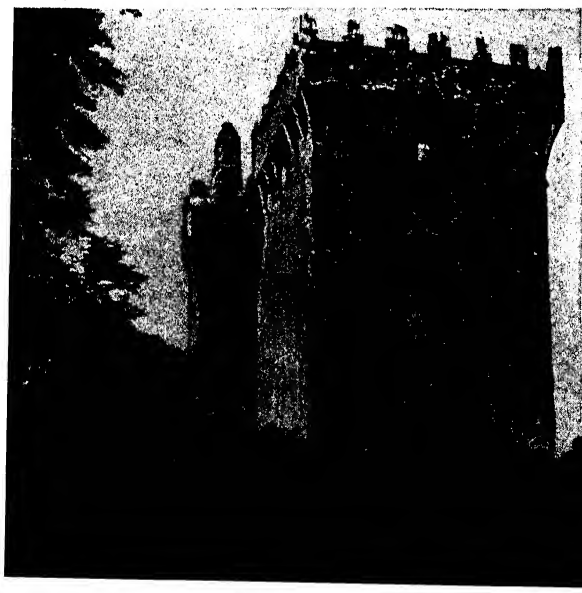




Travel Magazine—Ewing Galloway

FAMED IN IRELAND

The horse and cart, no matter how old and decrepit, still serve the need of rural folk. In Blarney Castle, below, the blarney stone is near the highest point at the left. It is difficult for one's lips to reach, but if one is able to kiss the stone, Irishmen believe the feat gives the tongue the power of flattery and of complimentary speech.



tries, particularly to the United States, where they have become naturalized.

The population reached a high total of 8,196,000 about a hundred years ago. Famine due to complete failure of the potato crop in 1845 killed thousands and caused a vast number to emigrate; within five years a million went to the United States. Unsettled political conditions and poverty later led many others to leave. In 1911 the population was 4,381,400, but at the census of 1926 only 4,228,553 were reported—1,256,561 for Northern Ireland and 2,971,992 for the Irish Free State.

Language and Literature. The Irish language belongs to the Gaelic branch of the Celtic group of languages, and it is closely akin to the Gaelic of Scotland and the Manx, and more remotely allied to the British dialects—Welsh, Cornish and Breton. Irish literature is rather varied and extensive, including history, legendary and actual, in prose and verse; annals, genealogies and pedigrees, mythological and imaginative tales, lyric poetry, satire, lives of saints and treatises on law, science and grammar. Some of these may be as old as the fifth century of our era. One of the earliest historic pieces is a metrical life of Saint Patrick. The glosses written to Latin works by Irish ecclesiastics, in the monasteries on the Continent, founded during the seventh and eighth centuries, are among the oldest specimens of the language. Many bardic remains belong to the period of the English conquest, but after that date Irish poetry appears to have sunk. Many bards, however, who were still maintained by the native chiefs, helped by their songs to keep up a national feeling hostile to the English domination. The chief interest, in fact, in medieval Irish literature attaches to the ballad cycles.

Although Irish prose almost ceased to be produced after the seventeenth century, the Irish language has been used in poetry up to the present time. The last years of the nineteenth century saw the beginnings of a movement in literature which corresponds roughly to the Home Rule or nationalist idea in government. A drama and poetry in which the Irish nation may express itself, are the aim of this new school, led by William Butler Yeats, Lady Gregory and John M. Synge. Most of the works of this newer generation of writers are in English, but a few are in Gaelic.

Agriculture. Aside from the waste lands on the mountains and the marshes of the lowland plain, the soil of Ireland is very fertile, and farming is the most important industry. Nearly 12,000,000 acres are under cultivation, over 8,000 acres being devoted to flax, a plant whose fiber is indispensable for the manufacture of linen. Potatoes constitute the chief food crop; in fact, the name *Irish* is applied to that vegetable because of its general cultivation and use in the island. The greatest number of acres is devoted to oats, and there are profitable yields of barley, turnips and other garden vegetables. There are broad tracts of meadow grass, and in some sections hay is cut. Cattle and sheep are of chief importance among livestock, but large numbers of horses of excellent breed are also produced.

The Land Question. One cannot discuss Irish agriculture without referring to the Irish land situation. Years ago the English took over for themselves large sections of the best land, and Ireland suffered the horrors of absentee landlord rule. Oppressive rents and other forms of injustice reduced the people to misery, but since the latter part of the nineteenth century there has been great improvement in conditions. In accordance with the provisions of a series of Land Acts the British Government bought back the land and resold it to the tenants on the basis of annual installments. A Department of Agriculture for Ireland was established, which provided traveling lecturers who gave instruction in farming, fruit raising, bee-keeping, butter making, etc. There were also maintained a number of agricultural schools and experiment stations, and schools of rural domestic economy.

Manufactures. Ulster, in Northern Ireland, is the chief manufacturing section of the country. The most important manufactured product is linen, which is everywhere famed for its superior quality. The city of Belfast, where the linen industry is chiefly centered, has an annual output valued at about \$60,000,000. Considerable attention is also given to woolen textiles, especially tweeds. Belfast is also the center of a thriving ship-building industry. Other branches of manufacture include brewing and distilling, and such home occupations as lace making and the embroidering of muslin. Lack of suitable fuel prevents any great development of Irish manufactures.

Mineral Resources. In some places particularly in the southwest, the coal measures occupy considerable areas, but the quality of the coal is generally very inferior, and it is worked only to a very small extent, the yearly output being only about 100,000 tons. The peasants burn peat (which see), found in inexhaustible quantities in the mireland. Among minerals other than coal, Ireland produces over a million tons a year of limestone, sandstone, clay and chalk. There are small deposits of iron.

Fisheries. The fishing industry represents a considerable factor in the national economy. Over 12,000 men engage in it, using over 3,500 vessels. The annual catch is valued at about £500,000, about half coming from inland waters. Along the rivers and coasts salmon are caught; the haddock fisheries are found east of the Leinster coast, mackerel are pursued on the west coast, and hake on the south coast. The industry has recently been aided by government loans; harbors and piers have been constructed for vessels.

Transportation and Commerce. Railways connect all of the leading towns. The Shannon is navigable for ocean steamers as far as Limerick, and nearly all streams are navigable in their lower courses for smaller boats. Many of the rivers have been canalized, and all of the principal streams are connected by canals, so that Ireland has an excellent system of inland waterways, which, combined with the railways and good roads, afford ample transportation facilities.

Over 3,400 miles of railroads are in operation, representing a number of small systems having connection with each other. Of this total, nearly 3,000 miles are in the Free State. Motorbus transportation is popular throughout the island; the number of passengers carried yearly is about 75,000,000. There are about sixty miles of electric railways, principally in Dublin and Belfast, the two capital cities.

Ireland has a prosperous foreign trade, and Belfast, Dublin, Waterford, Cork and Cobh (Queenstown) are busy ports. Cobh is the chief Irish port of call for steamers from America. Live stock, linens, liquor and meat and dairy products are exported to England in large quantities, and the island imports from other countries large amounts of farm products.

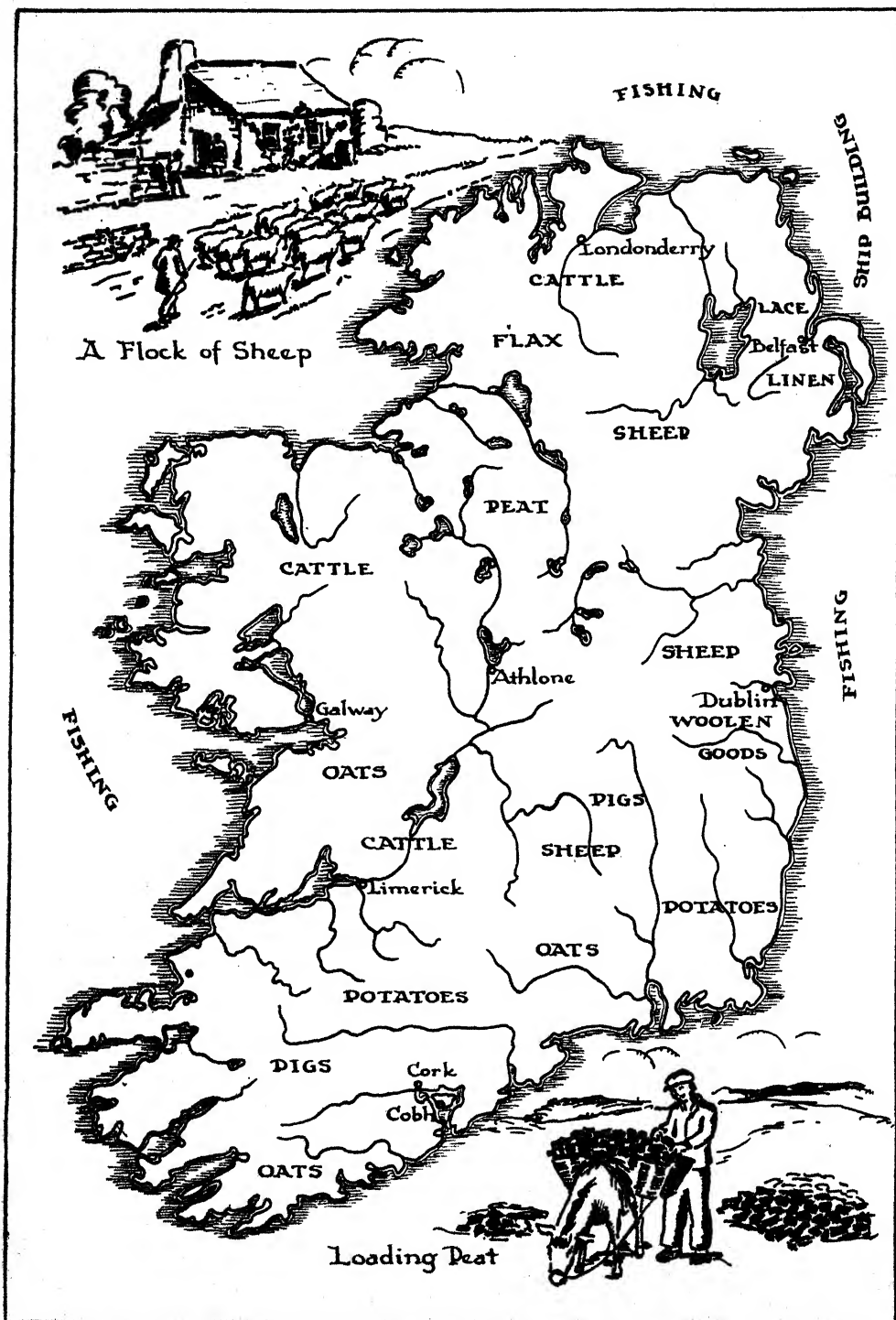
Education and Religion. Both the Free State and Northern Ireland promote the in-

terests of education, with the result that a large illiteracy is being gradually reduced; it is now less than nine per cent. In Northern Ireland, where Protestantism prevails, though a fourth of the people there are Roman Catholics, there is no public sectarian instruction, but in the Free State, which is overwhelmingly Catholic, sectarian doctrines are given some attention. Moreover, in the Free State the Irish language is being revived, with the hope that it may in time supplant English; it is a required subject for study. The Free State has three universities. The famed University of Dublin is the most important; Dublin has also a University College, and Cork and Galway are university cities. There is the strong University of Belfast in Northern Ireland. In both the Free State and Northern Ireland are strong secondary schools in good number, which receive pupils from 7,200 elementary schools. There is entire freedom of worship, both in Northern Ireland and the Free State, though in the latter there are only about 200,000 Protestants in a population of almost 3,000,000.

Government. Before the division of the island into two governments, the Free State and Northern Ireland, it was represented as a unit in the British Parliament by 103 members of the House of Commons and 28 peers in the House of Lords; this was according to a provision of the Act of Union of 1800. The chief executive was the Lord-Lieutenant, appointed by the English sovereign for a term of five years.

The Irish Free State. The treaty of 1922 which erected the Free State declared that it should be a self-governing member of the British Empire, with full control of all of its internal affairs. Allegiance to the king was the tie which should bind the Free State to the mother country. A legislature of two houses was authorized. The lower house is a house of representatives, called the Dail Eireann; the upper house, or senate, was the Seanid Eireann. There are 153 members in the Dail. In 1936, after heated controversy, the senate was abolished. The executive power is lodged in a Council of from five to twelve members. The head of the state bears the title of President of the Council; popularly throughout the world he is called, incorrectly, the President of Ireland. He is elected by the Dail, and not by popular vote.

Northern Ireland. See outline of government, page 1835.



THE PRINCIPAL INDUSTRIES OF PRESENT-DAY IRELAND

History. Little is known of the earliest history of Ireland. From the native legends we know that the island was for many centuries inhabited by various Celtic tribes; but the authentic record begins with the fourth century A. D., when the Scoti, the strongest tribe, subdued the other tribes inhabiting the island and descended upon Britain, then a Roman province. From Britain they extended their expeditions into Gaul. In these early centuries, Ireland seems to have been divided into numerous provinces, each of which, although it had its own king, was dependent on one monarch, to whom the central province was given. Each clan also had a chief, who was chosen from its most important family.

The religion of Ireland in the early centuries of the Christian Era was a nature worship, and the priests, or Druids, and poets, or bards, occupied a position almost equaling that of the king in honor. Christianity found its way into Ireland at an early date, and by the middle of the fourth century it had made considerable progress. It is said that more than in any other heathen country, conversion to Christianity in Ireland was bloodlessly effected. By 432 the young British priest, afterward known as Saint Patrick, began his great mission in Ireland. Other missionaries continued the work in the sixth century, and many churches and monasteries were founded. Religion and learning flourished in the monasteries, which soon began to send out zealous missionaries to establish churches in Britain and on the continent.

In the eighth century the Norsemen began to make incursions upon the Irish Coast, and by the ninth century they had pushed far into the interior and founded a kingdom. Brian Boromhe defeated them in 1014 and united the greater part of the island under his rule. After the death of Brian, the island relapsed into its former state of division and anarchy. Henry II of England was authorized by the Pope in 1155 to take possession of Ireland on condition of paying an annual tribute, but not until twelve years later was he able to turn his attention to the island. Dermot MacMurragh, king of Leinster, who had been driven from his kingdom, fled to England and, seeking refuge at the court of Henry II, obtained permission to enlist the services of English subjects for the recovery of his realm. Returning with a force

of English, led by Richard Clare, called "Strongbow," Dermot was for a time successful, and regained his seat on the throne. Upon his death Strongbow, who had married Dermot's daughter, came to the throne, and his English subjects were permitted to establish themselves on lands in the eastern part of the island. When Henry II visited Ireland in 1172 he received the homage of the great princes and was recognized as lord of Ireland.

Many Norman barons and their followers now settled in the country, but the English power was far from being established over the whole of it, and the gradual adoption by these new settlers of the customs and languages of the natives decreased British power. By the time of the Wars of the Roses the only part over which England had real authority was a few towns on the coast and a small district about Dublin and Drogheda, known as the Pale. The Irish lived according to their old customs, under their own chiefs, and in manners and mode of life were still totally uncivilized. Under Henry VII a law was enacted making Irish Parliament dependent upon the English king, and the power of the English thus became somewhat stronger.

Soon after Henry VIII had declared himself the head of the Anglican Church, he began his crusade against the Catholics in Ireland. He caused the monasteries to be destroyed and their wealth to be confiscated, and ordered the prosecution of all persons who refused to recognize him as the head of the Church. To offset these attacks on the religion of the Irish, Henry allowed the Irish chiefs a share in the confiscated property of the monasteries and left them under their own laws. In 1541, by an act of the Irish Parliament, Henry was given the title of *King of Ireland*, instead of *Lord*. Edward VI continued the policy of his father of combating the Catholic religion in Ireland, but this change was bitterly opposed, and Mary was able to undo all that had been done by her two predecessors in establishing the Protestant religion.

Elizabeth in her turn imposed Protestant clergy upon the people, and her reign was marked by a series of rising which terminated in the reduction of the whole island. Great stretches were taken from the Irish chiefs and distributed among English noblemen, who were to settle their new estates with Eng-

lish farmers. The injustice of this system and the fact that Catholics were excluded from all public appointments led in 1641 to another attempt to shake off the English yoke. Great atrocities were committed on both sides. In 1641 Cromwell was appointed lieutenant of the island and energetically but cruelly reduced the country in nine months. James II, himself a Catholic, advanced Catholics in Ireland to important positions, and when, after the revolution which placed William and Mary on the throne, James landed in Ireland and sought Irish aid for his restoration, he was enthusiastically received. In 1690, however, William III landed in the island and in the Battle of the Boyne completely defeated the forces of James. Limerick, the last place which held out for James, capitulated in 1691, and a treaty was concluded by which the Catholics in Ireland were to be allowed the exercise of their religion. This treaty was not well kept by the English. By a decree of Parliament passed a short time later, hundreds of thousands of acres of Irish land were confiscated and divided among Protestants. Cruel penal laws were passed against those who adhered to the Catholic religion; Catholic ecclesiastical dignitaries were banished, and all Catholics were declared incapable of holding public office, acquiring land-property or marrying a Protestant.

Not all of these laws were always rigorously carried out, yet they excited great bitterness of feeling and led to frequent risings. In 1778 the laws were made much more lenient, the Catholics were given a right to acquire landed property, erect schools and exercise their religion under fewer restrictions. In 1798, while England was engaged in the war with the revolutionists in France, the Irish again revolted, but the rebellion was speedily crushed. The British government now resolved to unite the English and Irish Parliaments, and an act providing for the legislative union of the two countries passed the Irish and the British Parliaments in 1800. This act went into effect on January 1, 1801.

The Irish patriots bitterly opposed this extinction of the legislative independence of Ireland, and from that day until the present there has been more or less agitation for its repeal and the establishment of the old Irish parliament. In 1841, under Daniel O'Connell, Ireland was brought to the verge of insurrection, but the movement was suppressed.

For many years other troubles had racked Ireland, occasioned by the oppressive land laws which had been enacted from time to time. The suffering caused by these laws came to a climax in 1845 and 1846, when a great potato famine occurred. Thousands died of starvation and hundreds of thousands emigrated to America. Subsequently certain reforms in the land laws were carried out, and agricultural and manufacturing interests revived, but the struggle for liberty continued and took form in an agitation for home rule. (For the details of this long struggle, see HOME RULE.)

A permanent act for the repression of crime in Ireland was passed in 1887. In 1898 an important act was passed, establishing Irish county councils, rural district schools and boards of guardians, and encouraged by this the people began to proclaim more boldly their discontent with the existing land laws and their desire for home rule. In 1903 the Land Purchase Bill was passed, providing that tenants or sub-tenants may purchase the land from great landlords and hold it as their own. The disposal of the land question removed one of the vexing preliminaries to Home Rule. In 1914 the Government of Ireland Bill, as the Home Rule measure was officially called, became a law, but its application was postponed on account of the outbreak of the World War and the opposition of the people of Ulster.

The World War. The attitude of the Irish people in this great crisis was anxiously watched by friends of the allies. Germany, it is known, counted on England's remaining neutral because of its Irish problem, but when England actually declared war thousands of Irishmen from all parts of the island enlisted for active service. The Ulster men who had been drilling and making preparations to resist Home Rule now offered to fight for England, and for a time it seemed that the political quarrel was forgotten. The Nationalist Irish party in Parliament, led by John Redmond, unanimously voted to support the war, though they were dissatisfied with England's postponement of Home Rule.

The political truce did not, however, bring harmony. A strong and growing faction in Ireland, the Sinn Fein Society, took advantage of England's difficulties, and in April, 1916, led a rebellion in Dublin for the purpose of securing complete independence. It was proved that they had been in commun-

ication with persons in Germany, and after the rebellion was crushed several of their chiefs, including Sir Roger Casement, were executed by the British.

After the World War. In 1918 the general elections for seats in the British Parliament resulted in substantial gains for the Sinn Feiners. Encouraged by these gains, they called an assembly in Dublin in 1919 and proclaimed the Republic of Ireland, with Eamon de Valera as President. Civil war broke out, and, fearing new disasters for the Irish people, Premier Lloyd George proposed a peace conference. The result, a compromise, was embodied in the Anglo-Irish treaty that set up the Irish Free State as a self-governing dominion in the British "community of nations." Northern Ireland (see below) refused to become a part of the Free State.

A provisional government was organized in January, 1922, and later in the year a Constitution was adopted. Arthur Griffith died during his term as Provisional President, and in December, 1922, William T. Cosgrave became head of the permanent government, with the title President of the Executive Council. The Cosgrave government was in power until February, 1932, when Fianna Fail, or party of De Valera, won the general election.

When the new Dail convened, De Valera was elected President of the Council, and he proceeded at once to inaugurate a policy of severing all possible ties with England. By refusing to pay the land annuities, as provided by the treaty, he brought on a trade war with England, as the British retaliated by placing tariffs on Irish imports, with the exception of a special coal and cattle arrangement. Politically, he did everything but repudiate the dominion status of the Free State. Ended forever are the following: the oath of allegiance to the Crown; the royal veto on legislation; the right of the king to initiate financial measures; and the right of appeal to the Privy Council from decisions of the Supreme Court of Ireland. In May, 1936 the Seanad Eireann was abolished by the Dail, and now the Free State has only the lower house of legislature. Finally, at the end of the year, when the Irish Free State was asked to approve the abdication of Edward VIII, as required by law, De Valera admitted the dominion status by giving the required assent, but he made it an occasion

of abolishing the office of Governor-General.

Northern Ireland. This section is made up of six of the nine counties of Ulster and the parliamentary boroughs of Belfast and Londonderry. The counties are Antrim, Armagh, Down, Londonderry, Fermanagh and Tyrone. Northern Ireland is governed in local matters by a Parliament consisting of a Senate of twenty-six members and a House of Commons of fifty-two. It returns thirteen members to the British House of Commons. The capital of Northern Ireland is Belfast.

Related Articles. Consult the following titles for additional information:

GEOGRAPHY

Belfast	Killarney
Cork	Limerick
Dublin	Queenstown
Giant's Causeway	Shannon
Irish Sea	

HISTORY

Collins, Michael	Parnell, Charles
De Valera, Eamon	Stewart
Emmet, Robert	Patrick, Saint
Home Rule	Redmond, John
O'Connell, Daniel	Sinn Fein
	World War

IRELAND, JOHN (1838-1918), an American Catholic prelate, born in County Kilkenny, Ireland. When still a boy he migrated with his parents to Saint Paul, Minnesota. Afterwards he was sent to France to be educated for the priesthood, and was ordained in 1861. In 1875 he became coadjutor bishop of Saint Paul, and on the resignation of Bishop Grace, in 1888, was made archbishop of Saint Paul. He was active in establishing the Catholic University in Washington and in colonizing the Northwest, and was an ardent temperance advocate.

IRIDIUM, a metallic element found in various ores, chiefly in the Ural Mountains and on the western coast of the United States. Iridium takes its name from the variety of colors it exhibits while dissolving in hydrochloric acid. It is not malleable and is the most infusible of metals. It forms a number of alloys, one of which, *iridosmine*, occurs native. The alloy with gold is malleable and much resembles gold in appearance; that with copper is pale red and ductile.

IRIS, in Greek mythology, the fleet, golden-winged messenger of the Olympian gods, represented with wings and with a herald's staff in her hand. The rainbow was originally regarded as the path over which she passed to earth, and thus Iris herself came in time to be regarded as the personification of the rainbow.

IRIS, a family of plants related to the lilies found in marshes and wet meadows in the

north temperate zones of both hemispheres. The foliage is sword-shaped and erect, the flowers showy and with an almost rainbow range of color, hence the name. The chief American species are known as *blue flag* and *purple flag*. One species, known as the *fleur-de-luce* or *fleur-de-lis*, became the national flower of France in the thirteenth century, and later was adopted on the national emblem. It is also the emblem of the Italian city of Florence. Orris root comes from a European species. The iris has within recent years been extensively used in landscape gardening, where it is remarkably effective.

IRIS (in physiology). See **EYE**.

IRISH FREE STATE, the official name of that part of Ireland not included in the United Kingdom. It was constituted by the Anglo-Irish Treaty of 1921. In 1926 the Free State was also recognized as one of the six self-governing Dominions of the British Commonwealth of Nations (which see). It consists of the three southern provinces of Ireland—Leinster, Munster and Connaught; and of three counties in the province of Ulster—Cavan, Donegal and Monaghan. The total area is 26,601 square miles. The population in 1935 was 3,033,000, by official estimate. Dublin is the capital of the Free State. Other important or interesting places include Cork, Killarney, Limerick and Cobh. For the history and government of the Free State, see the article **IRELAND**, in which there is a map of the principal industries. See, also, **HOME RULE**.

IRISH MOSS, a name given to several species of seaweed which grow off the rocky coasts of most parts of Europe and in some North American waters. The weeds are used medicinally and as food. The principal commercial species is from two to twelve inches long, is flexible, reddish brown in color and has numerous forked branches. Preparing it for market consists in washing, bleaching in the sun and drying. Nutritious soups and jellies are made from it. *Carrageen* is one of its local names.

IRISH SEA, that part of the sea between Great Britain and Ireland, north of Saint George's Channel and south of the North Channel. It is 130 miles long and about sixty miles wide. It contains Anglesey Island and the Isle of Man.

IRITIS, an inflammation of the iris of the eye. It is accompanied by a remarkable change in the color of the iris and causes

great pain in the eye, forehead and side of the head, a pain which frequently grows more severe at night. Iritis may be caused by wounds in the iris, from too prolonged use of the eye or from constitutional diseases; such as rheumatism or tuberculosis. A disorder of this nature should have the attention of a reliable physician.

IRKUTSK, *ir kootsk'*, **SIBERIA**, the largest city in the Siberian area of Soviet Russia, and the capital of the Eastern Siberian Region. It is located forty miles from the southern end of Lake Baikal, near the Mongolian boundary, on the Angara River and the Trans-Siberian Railroad. The small, unnavigable River Irkut joins the Angara here. Irkutsk is a well-built city of modern improvements and wide streets. It has a university, a teachers' training school and the Workers' Scientific Institute, and is the headquarters of a branch of the Russian Geographic Society. Industrially, the city is important for its breweries, lumber and flour mills and leather factories. Several caravan routes from China to the Trans-Siberian Railroad merge at this point. The city has airplane service. After the fall of Kerensky, there was serious fighting in Irkutsk between the Red and White armies. Admiral Kolchak was executed here in 1920. Population, 1933, 158,500.

IRON, the most useful and one of the most plentiful of all metals, more needed by man than any other commercial element in the universe. Were we to be deprived of all gold and silver their loss would prove embarrassing for but a short time; substitutes for them could be provided. But if the world were to be deprived at once of all its mines of iron all material progress would be stopped, and civilization soon would have to content itself with the crude devices of past ages. As soon as existing things made of iron were worn out there could be no more railroad trains or steamboats, no telegraphs or telephones (not even the radio). There would be no great newspapers, for they could not be printed; the cloth for our clothing would again be homespun; there would be no modern plows, binders or threshing machines. We would be deprived of automobiles; there would be no more tall buildings—and only simple ones of any kind for there would be no nails to bind their parts together—no stoves such as we know now, no battleships of steel and no great

guns—no more murderous modern wars. Every child can name a hundred common things that could not be made without iron.

Iron in a pure state is a silver-gray metal, and it has a brilliant luster. It is seven and three-fourths times as heavy as water, is highly ductile and malleable, and can be tempered to varying degrees of hardness.

The Iron Age. Before iron was discovered and man learned how to use it, civilization was in the slowly-developing periods of prehistoric ages known as the Stone Age and the Bronze Age. There are no dates for the beginning of the Iron Age; it began at different times in different parts of the world and progressed slowly because of lack of ready communication. Indeed, the Iron Age has not yet dawned among a few isolated peoples. The greater part of the world is now in the period of greatest development of this wonderful Age.

The Nature of Iron. Considered from the standpoint of the chemist, iron is one of the ninety-two elements which compose the material universe. There are thousands of other materials, but all of them are compounds or mixtures of two or more of these elements. Iron in its state of purity has been found as yet only in one small area in Greenland, and there only in a few masses of several tons, imbedded in rocks.

The iron we dig from the earth is not chemically pure; it contains other materials, such as oxygen, sulphur, carbon, lime, arsenic and phosphorus. We find it mixed in the mines, too, in many places, with nickel, copper, aluminum, manganese and other metals. Before it can be made commercially useful the foreign substances must be removed from it, and to this fact are due the great smelting works and iron and steel mills of the world. Steel is included in the above statement, for steel is iron which has undergone certain hardening and refining processes.

Iron Ores. The common iron ore that great ships carry from the vicinity of the mines to manufacturing centers is rusty-red in color; it has the appearance of finely-grained material that has been burned. This is really the case, for in the earth where it has reposed for uncounted thousands of years it has been subject to the influence of oxygen.

The several varieties of iron ore of most importance are the following:

Magnetite, an ore with a metallic luster, blackish in color, contains about 72 per cent

iron. Because of its high iron content, magnetite is strongly attracted to a magnet.

Hematite, which is also known as red hematite, red oxide of iron, and specular iron ore, contains 70 per cent iron—almost as much as magnetite. It is the chief source of iron in the United States, especially abundant in the Lake Superior region in Michigan and Minnesota. The name red hematite supplies the adjective denoting color to distinguish it from limonite, which has a brown predominating tone.

Limonite, or brown hematite, contains about 60 per cent iron. Another name for it is brown iron ore.

Siderite, called also spathic ore and carbonate ore, is only a little more than half as valuable in iron content as hematite; it is only 40 per cent iron.

Brown ore is a term commonly employed for limonite.

The above figures explain why ores taken from the ground are not fit at once for commercial use. If such ore were to be melted and cast into solid form the impurities it contains would condemn it. Notwithstanding the care exercised in manufacturing grades of iron and steel for various uses, sometimes errors result, and months or years later we read of a railroad steel rail breaking or a steel bridge crumbling at a vital point, with resulting disaster. This may happen if even a little too much oxygen is left in the steel in the process of manufacture.

Where Iron is Obtained. The United States contains more iron ore than any other country in the world. About 93 per cent of that country's ore is hematite, and the greater part of that is mined in the Lake Superior region of Minnesota and Michigan, in six important locations, known as the Marquette, the Menominee, the Gogebic, the Vermillion and Mesabi, and the Cuyana. Hematite is found also in the states of the Appalachian Mountains, roughly from Northeastern Pennsylvania to Alabama. The greatest mining development in the eastern region is in a large district of which Birmingham, Ala., is the center. The brown ores are most plentiful in the Southern Appalachians, from Western Virginia southward. The other ores are obtained from scattering localities in the same regions. Colorado, New Mexico and Wyoming have a few mines, and together produce about 600,000 tons yearly.

The Iron and Steel Industry. No other

Outline on Iron and Steel

I. PROPERTIES

- (1) Ductility
- (2) Malleability
- (3) Hardness (tempering)
- (4) Magnetism

II. IMPURITIES

- (1) Carbon
- (2) Silicon
- (3) Sulphur
- (4) Phosphorus

III. COMPOUNDS

- (1) Oxides
- (2) Sulphides
- (3) Chloride
- (4) Hydrates

IV. ORES

- (1) Kinds
 - (a) Red hematite
 - (b) Brown hematite
 - (c) Magnetite
 - (d) Spathic
- (2) Distribution
 - (a) United States
 - (b) Foreign Countries

V. MINING ORE

- (1) Methods
 - (a) Blasting. Ore in form of ledge
 - (b) Steam shovel. When ore is soft
- (2) Shipping
 - (a) Methods
 - (b) Ports
- (3) Smelting—Object
 - (a) Crusher
 - (b) Blast furnace
 - (c) Manner of tapping, cooling, etc.

VI. PIG IRON

- (1) Characteristics
 - (a) Rough
 - (b) Coarse
 - (c) Brittle
- (2) Uses

VII. WROUGHT IRON

- (1) Characteristics
 - (a) Soft
 - (b) Flexible
 - (c) Ductile
 - (d) Malleable

(2) Uses

VIII. STEEL

(1) Characteristics

- (a) Tough
- (b) Hard
- (c) Tenacious
- (d) Gray in color

(2) Uses

- (a) Framework of large buildings
- (b) Bridges
- (c) Steel rails and ties
- (d) Watches—Mainsprings, etc.

IX. USES OF IRON IN MEDICINE

- (1) Blood purifier
- (2) Stimulates digestion

Questions on Iron and Steel

Why does iron rust easily? What is rust? What kind of iron in your kitchen range?

Is there any other known metal that could be used for the same purposes as iron?

Which could you do without the better, gold or iron? Which constitutes the greatest factor in the world's progress?

Who was Bessemer?

Why is coke used for blast furnaces?

Distinguish between pig iron, cast iron, wrought iron and steel. Name articles made from each.

How did they handle iron in the Iron Age? What are some of the new uses of steel?

How much heavier is iron than water? For what purpose is pure iron used?

How does the United States stand in the production of iron ore?

What is the method of mining iron ore?

How are the impurities separated from the iron?

How is a blast furnace operated?

In what is the molten iron cooled?

What Southern city is a great center of the iron industry?

Which is the most common of the ores of iron?

Is iron ever in a pure state when it comes from the mine?

single industry equals that of iron and steel manufacture, in capital invested, number of persons employed, and in gross value of its products. In the United States alone the output in its most favorable year (1929) was 42½ million tons of pig iron and 56½ million tons of steel; the average production covering a period of ten years during normal times is about two-thirds of the above figures. The largest American producer is the United States Steel Corporation. The average in Great Britain, France, and Germany is about one-fifth that of America.

How Ore is Shipped. Very little iron ore is carried for country-wide distribution on trains during the greater part of its journey. Lake Superior ore is taken largely to Duluth, Minn., and Superior, Wis., and there loaded on great steel barges, each of which can carry 10,000 tons. The loading and unloading devices are marvels of ingenuity, making it possible to transfer an entire boat load in a few hours. These boats take it to South Chicago, Ill., to Gary, Ind., and to Conneaut and Ashtabula, O. At the two cities on Lake Michigan are some of the greatest iron and steel plants in the world. South Chicago and Gary ship a part of their ore by train to other mills at Joliet, Ill., and Milwaukee. The Lake Erie ports receive the ore and ship most of it by train to the great Pittsburgh district. Appalachian ore is transported by the railroads to various eastern mills.

Related Articles. The processes of iron manufacture are so closely related to the story of steel that they are combined with the latter under the title Steel. Consult, also, for additional information:

Ductility	Iron Age	Pyrite
Hematite	Malleability	Tempering

IRON AGE, a stage of civilization and culture in the history of peoples when they began to use iron for tools and weapons. It is the last of the three prehistoric ages of progress, following the Stone Age and the Bronze Age. In Europe the knowledge of iron began at the south and extended northward. Greece was changing from the use of bronze to that of iron in the time of Homer, while Scandinavia did not enter its Iron Age until about the beginning of the Christian Era. The implements and weapons of the early Iron Age were not cast, but were hammered into shape, and accordingly they took a great variety of forms. Iron was followed by steel, both of which may be displaced by the new light aluminum alloys now

under development. See **STONE AGE**; **BRONZE AGE**; **ARCHAEOLOGY**.

IRON CROSS, a Prussian military decoration, instituted by Frederick William III in 1813. It was revived by Emperor William I in 1870, on the occasion of the Franco-German War, and it then became the war decoration of any German soldier in that war. In 1914 William II again revived the decoration for soldiers of the Empire in the World War. It was awarded to soldiers who had distinguished themselves in war. The cross is Maltese in form, about two inches in length and width, is made of iron, edged with silver, and is worn suspended from the neck or pinned to the coat. Officers of high rank received a cross double the ordinary size.



THE IRON CROSS

In the latter war the Iron Cross lost much of its value to German soldiers because it was so freely bestowed. Several thousand were distributed for each grant of the Victoria Cross of Great Britain, the Croix de Guerre of France or the Distinguished Service Cross of America.

IRON CROWN, the name of the old crown of the Lombards. It was made of gold and set with precious stones. On the inside of the crown is an iron circlet, said to have been made from a nail used at Christ's crucifixion, and given by Pope Gregory I to the Lombard Princess Theodelinda. The crown was used at the coronation of the Lombard kings and of the German emperors as rulers of Italy. It is preserved in the Church of Saint John the Baptist at Monza, Italy.

IRON GATE, a narrow pass in the lower course of the Danube at a point where the Transylvanian Alps nearly close in upon the river. It is just above Cladova, near where Rumania, Jugo-Slavia, and Hungary meet. Within very recent times excavations have been made in the river bed and a passage has been opened for vessels.

IRON MASK, THE MAN WITH THE, a mysterious prisoner confined in several French prisons in the reign of Louis XIV. All that is known of him is that he was above middle height, of a fine and noble figure and delicate brownish skin; that he had a pleasant voice, was well educated and fond of

reading and guitar playing, and that he died in the Bastille in 1703. The mask he wore seems to have been of black velvet, not iron. According to one conjecture he was a twin brother of Louis, imprisoned to prevent political complications; according to another, he was one Marechiel, a soldier of fortune of Lorraine, at one time head of a plot to assassinate the king.

IRON MOUNTAIN, a hill in Saint François County, Missouri, eighty miles south of Saint Louis, and 1,097 feet elevation above the sea. This mountain consists mainly of porphyry, traversed by an iron bed which contains one of the purest and richest ores in the United States.

IRON MOUNTAIN, MICH., the county seat of Dickinson County, forty-seven miles southwest of Marquette, on the Menominee River, and on the Chicago & North Western, the Chicago, Milwaukee, Saint Paul & Pacific and the Wisconsin & Michigan railroads. The city is in the vicinity of large iron mines and has manufactures of mining implements and lumber products. The place was settled in 1879 and incorporated in 1888. There is a city park of forty acres, and the town has a Carnegie Library and two hospitals. Population, 1920, 8,251; in 1930, 11,652, a gain of 40 per cent.

IRONSIDES, OLD. See CONSTITUTION, THE.

IRONTON, I'urn ton, OHIO, the county seat of Lawrence County, 140 miles southwest of Cincinnati, on the Ohio River and on the Norfolk & Western and the Detroit, Toledo & Ironton railroads. The Chesapeake & Ohio also makes connection from the other side of the river by a car ferry. The city has extensive river traffic facilities. It is in a region rich in iron ore, coal and pottery clay, and it has extensive manufactories of iron, cement, lumber, machinery, furniture and other articles. The important buildings are Memorial Hall, Masonic Temple, Odd Fellows' Hall, Briggs Public Library and a good court house. The place was settled in 1832 and was incorporated in 1849. Population, 1920, 14,007; in 1930, 16,621, a gain of over 18 per cent.

IRONWOOD, a popular name given to any tree with heavy timber. One of these trees, the American hop hornbeam, a small tree with a trunk only six inches in diameter, is so heavy it sinks in water. Several trees

of Africa and Asia have the same quality—ebony, for example.

IRONWOOD, MICH., a city in Gogebic County, 150 miles west of Marquette, on the Montreal River and on the Chicago & North Western, the "Soo Line," and the Duluth, South Shore & Atlantic railroads. Nearby is an airport. It is in the Gogebic iron region, and mining and lumbering are the principal industries. Ironwood has a Municipal Memorial Building and a Carnegie Library. The town was settled in 1884, and was incorporated in 1887. There is commission government. Population, 1930, 14,299.

IRONY, *ironi*, the name applied to that style of expression used by writers and orators when they say the opposite of what they mean. Irony is a favorite device of satirists, and when skilfully used it is one of the most effective weapons of pen and tongue. Irony may be either bitter or kindly. The writings of Swift are full of harsh irony, while in the novels of Thackeray one finds irony of a kindlier tone.

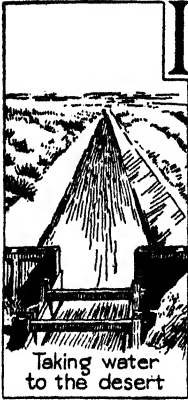
IROQUOIAN, *ir o kwo'ian*, **INDIANS**. The tribes belonging to this group held the land lying along the Saint Lawrence River from the coast to Lake Huron and south through the greater portion of New York and Pennsylvania. They tilled the soil, raising many vegetables, much tobacco and maize. Their houses were substantially built of split timber, and their respect for law and family ties gave them a strong organization. The name Iroquoian was originally applied by Champlain to the five tribes which had formed a league for mutual protection—the Mohawks, Oneidas, Onondagas, Cayuagas and Senecas.

The Huron, though of Iroquoian stock, never belonged to the confederacy, were continually at war with the Five Nations, and were finally driven out of Southern Ontario, their ancient home. Champlain took the part of the Huron, and in doing so he aroused the enmity of the Five Nations against the French—an enmity which was largely responsible for driving the French from their northern possessions. During the American Revolution the Iroquois sided with the English until they were thoroughly defeated by General Sullivan. There are now about 17,000 Iroquoian Indians, mostly located on reservations in New York State and the Province of Ontario.

Related Articles. Consult the following titles for additional information:

Cherokee Huron
Five Nations Mohawk

IRRAWADDY, *ir a wah'dy*. See IRAWADI.



IRRIGATION, *ir i go' shun*, that development of engineering which carries water from never-failing sources and distributes it over vast areas of "thirsty" land and makes arid places fit for homes of men. Plant life exists only when supplied with water in fairly plentiful quantities. Where not more than twenty inches of rain falls in a year arid regions exist; when ten

inches or less falls, the region is practically desert, and moisture must be applied artificially if the land is to be of value. Under well-planned irrigation systems the farmer does not have to scan the heavens for indications of needed rain; he can open gates on his irrigation ditches at regular intervals and maintain exactly the degree of moisture on his soil that his various crops may need.

More Particular Details. Irrigation is necessary under the following conditions:

1. When the annual rainfall is less than twenty inches.
2. When the annual rainfall, though sufficient for agricultural purposes, is unevenly distributed through the year, the greater portion occurring in months when crops cannot be grown.
3. In the growing of such crops as rice, which require the land to be flooded.

These conditions often render irrigation necessary in regions generally known as humid, and they account for the irrigated districts in Texas, Louisiana and other southern states where rice is grown.

How Water is Obtained. Nearly all rivers in the Western United States are irregular in flow. At times they may be torrential; at other periods, dry, or nearly so. Great dams have been built to hold the water of plentiful periods, and it is thereafter available for distribution at all times through great networks of ditches. Gates at needed places control the flow of water. Another source of supply where reservoirs are not necessary are rivers that rush down

the valleys from the mountains, where they are fed by perpetual snow.

It will be seen from the foregoing that irrigation requires three kinds of work:

1. Conserving the amount of rainfall around the sources of rivers which are used to water the arid regions. This is the work of the state and national governments and is one of the principal reasons for creating forest reserves. See *Forests and Forestry*.
2. The saving of water from melting snow and that which causes the overflow of streams during the rainy season. This requires the construction of numerous reservoirs and often involves expense too great for profitable investment of private capital.
3. Distribution of water to the irrigated districts. This is accomplished through systems of canals. One main channel conducts the water through the irrigated district, and from this small canals branch off at frequent intervals. From these, small canals, ditches and small channels distribute the water to all parts of the field.

The plan for obtaining the water from its source depends upon the source of supply and the topography of the country. Whenever possible, streams are tapped by the canals, as this is the least expensive method.

In many localities dams are constructed for the purpose of making reservoirs in which to store the surplus water for use during the dry season, or to divert the water of a stream from its original channel into the canals. In other localities the water has to be pumped to the height of several thousand feet in order to reach the irrigated surface. In some sections the water is obtained from artesian wells. When possible, the wells are so located as to do away with the necessity of canals and large ditches.

Irrigation is available for comparatively small farms only, and is suited to intensive farming, such as fruit growing. In some instances cereals can be raised with profit by irrigation, and in some localities it is resorted to for forage crops.

Irrigated Regions. There are nineteen American states and the Canadian provinces north of them that are called arid or semi-arid, in whole or in part. The vast area involved in the United States is greater than that of all the countries of Europe and of Japan, exclusive of Russia. Some of this is true desert, where crop production is wholly dependent upon artificial application of water. For many years irrigation of parts of this area was debated, but the immensity of the undertaking was one to be considered

only by the government, as the cost was beyond the means of private individuals.

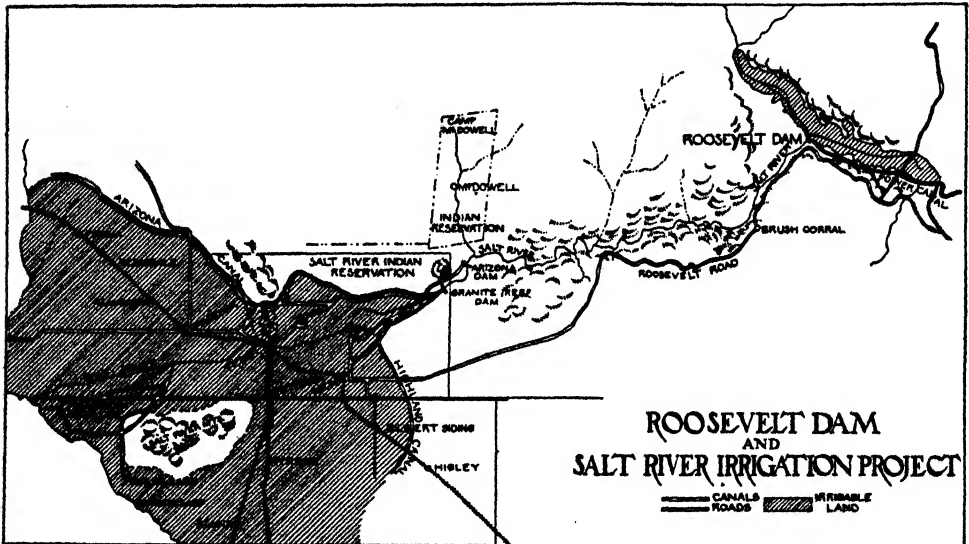
Government Aid. Since 1894 most irrigation projects have been carried on under one of two laws, the Carey Act, passed in 1894, and the Reclamation Law of 1902.

The Carey Act. This act grants to each of the states in the arid region, 1,000,000 acres of desert land, on condition of its reclamation. The national government has no further control over this land after it is granted to the state. Most of the projects undertaken upon the lands thus appropriated

5. The sale of water rights to private land-owners, restricting this to not more than 160 acres to each owner, thus making land monopoly impossible.

6. The final turning over to the people of the irrigation works, except the reservoirs, to be operated and managed by them under a system of home rule. By this provision the users of the water within ten years of the completion of the works will have repaid to the government the amount such works cost, without interest, and the money so returned can be used again and again in the construction of other works.

Extent of Irrigation Projects. The num-



have been under private enterprise, the parties entering into contract with the state to reclaim a certain area.

The Reclamation Act. This act was passed by Congress in 1902. It contains the following important provisions:

1. The creation of a reclamation fund which shall consist of the proceeds of the sales of public lands in the fifteen arid or semi-arid states and territories, this fund to be held in the treasury of the United States.

2. The establishment of a reclamation service in the United States Geological Survey, to investigate and report on the irrigation projects for the approval of the Secretary of the Interior, under whose authority construction may be authorized and contracts let.

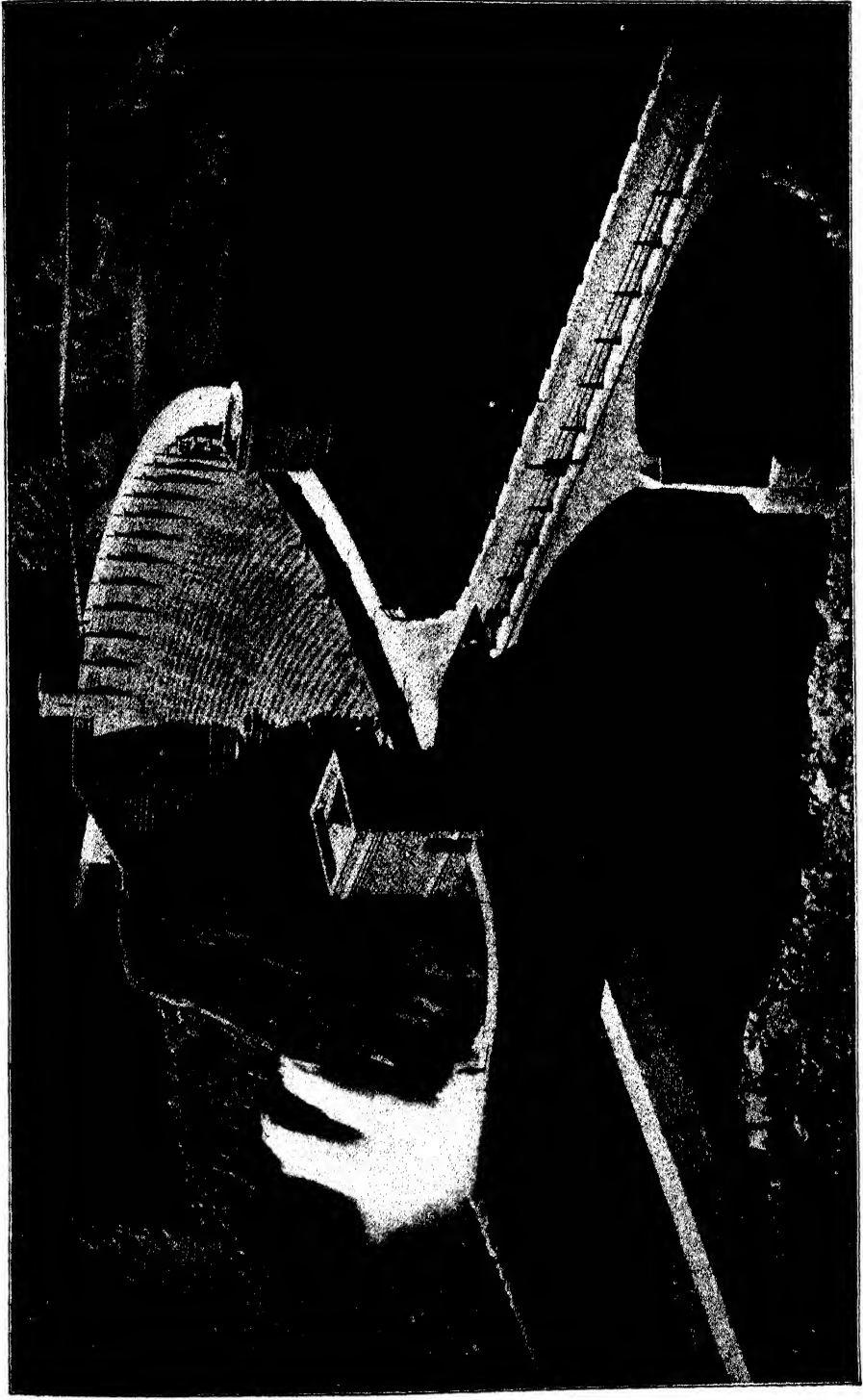
3. The return to the fund of the actual cost of each project by the sale of water rights, the payments to be made in installments running over a period of twenty years.

4. The holding of public lands for actual settlers, under the Homestead Act, in small units sufficient to support a family.

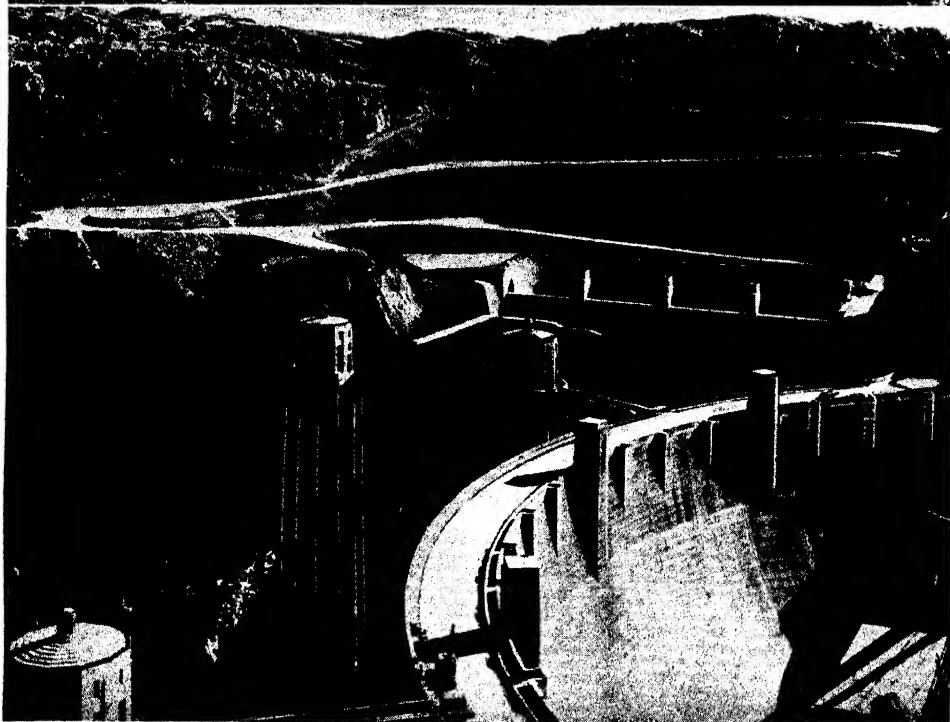
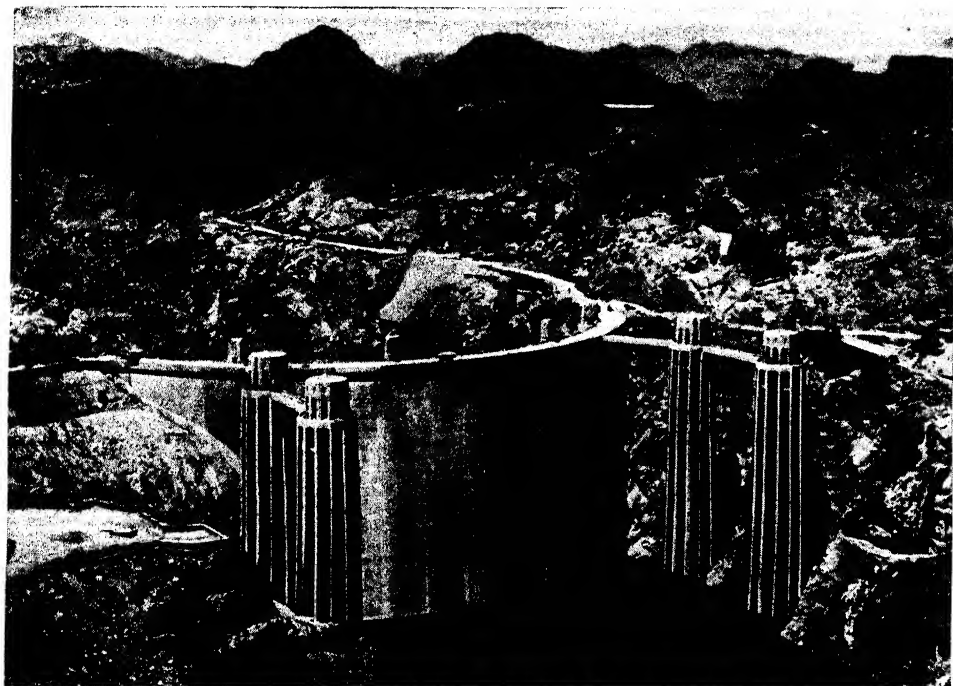
ber of acres under irrigation in the United States in 1930 was nearly 20,000,000, divided among nineteen states, as follows:

STATE	ACRES
Arizona	575,590
Arkansas	151,787
California	4,746,632
Colorado	3,393,619
Idaho	2,181,250
Kansas	71,290
Louisiana	450,901
Montana	1,594,912
Nebraska	532,617
Nevada	486,648
New Mexico	527,033
North Dakota	9,332
Oklahoma	1,573
Oregon	898,713
South Dakota	67,107
Texas	798,817
Utah	1,324,125
Washington	499,283
Wyoming	1,236,155

Great American Dams. Not only has the need for irrigation inspired great engineering projects, but also in connection with them government officials have been



ROOSEVELT DAM, IN SALT RIVER VALLEY, ARIZONA



Ewing Galloway

VIEWS OF BOULDER DAM

Above, upstream side of the great dam and the beginning of the vast man-made lake. Below, general view of the crest of the dam. The four-lane highway approach leads from Las Vegas, Nevada, to Kingman, Arizona.

[See over.]

mindful of the necessity for provision for flood control, the generation of hydroelectric power, and the need of cities for increased water supply. A few of the projects combine all of these benefits, while others have been more limited in scope. Some of the vast enterprises are described below.

Boulder Canyon Project. When the great dam on the Colorado River, below the Grand Canyon, on the Nevada-Arizona boundary, was well under way, the name *Hoover Dam* was applied to it, because Herbert Hoover, himself a great engineer and then President of the United States, exerted powerful influence in behalf of the project. The succeeding national administration at Washington, in power before the undertaking was completed, changed its name again to the original designation, *Boulder Dam*.

The seven states of Colorado, New Mexico, Wyoming, Utah, Nevada, Arizona, and California in various ways would be affected by the proposed dam. Their differences were adjusted between 1922 and 1928, and in the latter year the Congress passed a bill for its construction. The act provided for a great dam for water storage, an irrigation canal to water the Imperial and Coachella valleys, and a hydroelectric plant at the Boulder reservoir. Altogether the appropriations totalled \$165,000,000, the money to be supplied by the Federal government, to be repaid in fifty years, with interest at 4 per cent, from the sale of benefits to private companies, individuals, and cities.

Construction contracts were awarded to a group of engineering firms organized as the Six Companies. Work was well under way in 1932, and it was to be finished within seven years. The contractors turned it over to the government early in 1936, about two years ahead of the time limit.

Before construction could be begun, the water of the river had to be diverted from its course through four great tunnels, aggregating more than three miles in length. When the river was turned back into its course after the dam was finished, there began the filling up of a lake behind the structure which will probably be for all time the largest artificial body of water in the world, a lake 115 miles long, with an average of nearly thirty miles in width, 582 feet deep at maximum, covering an area of 227 square miles. The impounding of this great body of water will protect the valleys named from inunda-

tion and accumulation of silt, and it will furnish a mammoth reservoir to be tapped for irrigation and city water supply. The lake is eleven times larger than the one filled in above Elephant Butte Dam in New Mexico, and twelve times as large as the reser-



DIAGRAM OF THE REGION

voir at the great Assuan Dam on the River Nile. It will supply 30,500,000 acre-feet of water. This lake will be known as Lake Mead, named in honor of Dr. Elwood Mead, of the Bureau of Reclamation, which will supervise the operation of the dam.

The dam is 727 feet high (172 feet higher than Washington Monument); in its construction about 40,500,000 cubic feet of concrete were laid. It is 1,180 feet long at the top, where it is 45 feet wide; at the bottom it is 650 feet wide; these dimensions give it the distinction of being the highest and widest structure of any dam in the world. The horse power to be generated is not far from 1,800,000.

Cities of Southern California will secure a

large part of their water supply for domestic purposes from Lake Mead. Great aqueducts will carry the water as far as Los Angeles.

The Six Companies built the town of Boulder City to provide homes for workmen on the dam, and the population reached 5,000. It is expected that the town will be a resort city for visitors to the project.

Coolidge Dam, on the Gila River in Arizona, 28 miles east of Globe, was named for President Coolidge and dedicated by him in 1929. This dam is of the multiple-dome type; the domes distribute the water pressure among a number of buttresses, thus reducing the pressure on any one of them. The length of the dam is 915 feet; height, 250 feet. The impounded waters will irrigate 100,000 acres; the storage capacity is nearly 400,000 million gallons.

The Roosevelt Dam. One of the greatest irrigation projects of all times is called the Salt River Project. It has become more popularly known as the Roosevelt Dam and Irrigation Project, named for the former President Theodore Roosevelt, and dedicated by him in March, 1911. The accompanying sketch will give the reader a comprehensive idea of the project as a whole, the location of the dam, the land affected and the cities which cannot fail to benefit from the operation of this gigantic enterprise. Behind the dam is stored 1,300,000 acre-feet of water, or water enough to cover that number of acres to the depth of one foot. This means a three years' supply for Salt River Valley. Below the dam about fifty miles is a diversion dam, by means of which the water is turned into various canals.

Arrowrock Dam. This is a storage dam, completed in 1915, across the Boise River, Idaho. It has the distinction of being one of the highest masonry dams in the world, extending 350 feet above bedrock. The dam is constructed of rubble concrete and contains 585,130 cubic yards of material. The cost was about \$5,000,000, and it will irrigate 240,000 acres.

Other Irrigation Dams. In addition to those named above, the Federal government has constructed primarily for irrigation several other great dams. The Tennessee Valley development, known as the T. V. A., is not included among these, as its purposes do not include irrigation. They are as follows:

Owyhee, in Eastern Oregon. It is the high-

est irrigation dam in the United States excepting Boulder Dam (see above). The height is 405 feet; storage capacity, 232,983 million gallons, or 1,120,000 acre-feet of water (enough to cover that acreage to the depth of one foot). The lake formed is 52 miles long.

Shoshone, in Wyoming. The height is 328 feet; storage capacity, 143,588 million gallons.

Elephant Butte, on the Rio Grande River, between New Mexico and Texas. Height, 306 feet; storage capacity, 860,000 million gallons.

Pathfinder, on the North Platte River, between Nebraska and Wyoming. Height, 218 feet; storage capacity, 348,660 million gallons.

Irrigation in Canada. There are several notable irrigation projects in Canada.

The Canadian Pacific Railway has three large projects in the Province of Alberta, known as the Eastern, the Western, and the Lethbridge; the last being the oldest irrigation works in Alberta.

The Bow River furnishes water for the Eastern and Western sections. For the Western the water is taken near Calgary and irrigates 218,980 acres. For the Eastern the water is taken near Bassano, at the Horse Shoe Bend, where a great dam has been built. This irrigates 400,000 acres. The Lethbridge section takes water from the St. Mary's River and irrigates 89,000 acres.

The Canada Land and Irrigation Co., Ltd., takes its water from the Bow River and irrigates 130,000 acres. The main canal begins about 35 miles southeast of Calgary and runs in a southeasterly direction where it empties into a natural reservoir, known as Lake McGregor. The main canal issues from the southern end of the lake, at which point is built a dam 46 feet high and 2,100 feet long.

The Lethbridge Northern District takes its water from the Old Man River and irrigates 100,744 acres. The field of operation is indicated by the name.

The United Irrigation District lies west of Cardston, in lee of the mountains, between the Belly and the Waterton rivers. It takes its water from the Belly River and irrigates 34,235 acres.

By agreement with the Canadian Pacific Railway the Taber, Magrath and Raymond Districts get their water supply from the main canal of the Lethbridge Section. They

depend therefore on the St. Mary's River.

The Taber Irrigation District covers 21,499 acres.

The Magrath District has an irrigation area of 6,975 acres. *The Raymond District* has an irrigation area of 15,129 acres.

The New West Irrigation District, by agreement with the Canada Land and Irrigation Company gets its water from the Bow River and irrigates 4,501 acres.

Since the transfer of their natural resources to the provinces on October 1, 1930, the control of all surface waters is vested in the right of the Provinces. In 1931 in addition to the projects outlined, there were in Alberta 323 privately owned projects with an irrigable area of 56,339 acres.

In British Columbia. In recent years irrigation in British Columbia has taken enormous strides. In the southeastern part of the province are great areas which produce a good quality and large quantity of fruit when properly irrigated. It is here—in the Okanagan, Thompson and Columbia valleys—that irrigation is being extensively carried on. The district embraced in the valleys of the Okanagan and Thompson rivers, with their tributaries, contains 500,000 acres. It is claimed that ten acres of good irrigated fruit land here are equal in producing value to 160 acres of wheatland. A respectable beginning has been made in reclaiming this area, about 100,000 acres being covered by various systems now in operation or in course of construction. The provincial government has done much by revising the water laws, reserving the watersheds, protecting the forests from destruction by fire, providing survey for water measurements, etc.

The Central-Okanagan and Belgo-Canadian Companies at Kelowna, the White Valley Company farther north, Fruitlands at Kamloops and the British Columbia Horticultural Estates at Wallachin are examples of companies who are putting in permanent modern systems of steel and concrete. One of the chief factors in extending the areas of irrigated land is the utilization of natural storage basins; for instance, the water stored in Lake Aberdeen, the reservoir at the head of the White Valley, cost 60 cents per acre-foot, while at Penticton the reservoir cost \$17 per acre-foot. In this district the average cost of reclaiming lands by irrigation has been from \$30 to \$80 per acre, according to the character of the works. The average

annual cost to the user varies from \$5 to \$8, while the average difference in value due to irrigation is about \$100 an acre.

Other Irrigation Dams. The most famous irrigation project in the world is the Assuan Dam in Egypt, built by British engineers on the Nile River, four miles from Assuan. The original dam, completed in 1902, was a mile and a quarter long and 128 feet high. Two enlargements, made in 1907-1912 and 1930-1935, have raised the height to about 175 feet. Another great Egyptian dam is the Sennar, on the Blue Nile in the Sudan. It was completed in 1926 and is 128 feet high. The area capable of irrigation from the Nile waters is about 6,000,000 acres. India has a greater acreage under irrigation than any other country. Among the largest projects is the Lloyd Barrage, across the Indus. Completed in 1932, it is 190 feet high, and irrigates 5,000,000 acres of the Sind Desert. In India alone the total area artificially watered by irrigation amounts to more than 45,000,000 acres.

IRVING, *ur'ving*, HENRY, Sir (1838-1905), an English actor, born in Somersetshire. His name was JOHN HENRY BRODRIBB, but the name Irving, which he assumed for the stage, was legalized by royal license. For a time Irving was a clerk in London, but in 1856 he adopted the theatrical profession. For some years he met with no success, but at length in various light comedy parts he attracted some attention, and in 1870 he gained a real triumph in *The Two Roses*. With his presentation of Matthias in *The Bells* and the title rôles of *Eugene Aram*, *Hamlet*, *Macbeth*, *Richelieu* and *Othello* his fame steadily rose. In 1878 he leased the Lyceum Theater for himself, and with Ellen Terry as his leading actress he soon won recognition as the greatest of living English actors. In his repeated visits to the United States, both alone and with Miss Terry, he met with the most enthusiastic receptions. Besides the characters named, Irving appeared as Shylock, Mephistopheles, Robespierre, Benedick in *Much Ado About Nothing*, and in the title rôle of Tennyson's *Becket*. It was but a few hours after a presentation of this last play that Irving died. As an actor of great intellectual power, Irving ranks with the foremost of English actors. In emotional strength and fire he was somewhat deficient, however, and this prevented his attaining supreme rank.

IRVING, WASHINGTON (1783-1859), a famous American author, born in New York City. He was educated for the legal profession, but his tastes were in the direction of literature, and as early as 1802 his *Letters of Jonathan Oldstyle* appeared in the *New York Morning Chronicle*. Shortly afterward, being threatened with lung trouble, he sailed for Europe, visited most Continental countries and did not return to America until March, 1806. In the same year he was called to the New York bar. His pen was now very busy, though not with legal briefs. In 1807 he started a humorous journal called *Salmagundi*, in which his genial fancy had free sway. He next began a more ambitious project, a comic history of his state. *The Knickerbocker's History of New York* (1809) is of interest to-day as the first important work of humor produced in America, but its author at that time had no serious thought of taking up writing as a profession.

Irving had joined his two older brothers in a mercantile business, and in 1815 he went to Europe to look after their interests. The failure of this business, while he was in London in 1818, threw upon him the burden of his own support and the support of his brothers, as well. He settled in London, where his previous literary work secured him warm reception, and devoted himself entirely to literature, which up to this time he had scarcely regarded as a means of livelihood. His first publication, *Geoffrey Crayon's Sketch Book*, which contained the now classic *Rip Van Winkle* and *Legend of Sleepy Hollow*, became immediately popular. For seventeen years, until 1832, Irving resided in Europe, principally in England, France and Spain. This was a period of great literary activity and brought forth some of his most famous works, such as *Bracebridge Hall*, the *Tales of a Traveler*, the *Life of Columbus* and *The Alhambra*. In the course of this sojourn he was secretary to the American embassy in London.

In 1832 Irving returned to the United States and was proudly welcomed as the first man who had secured in Europe recognition of American literature. He bought a country-seat on the Hudson, near the Sleepy Hollow he had made famous, and named it "Sunnyside." Here, excepting four years spent in Spain as ambassador, he passed the remainder of his life. The chief

works of the period before his departure for Spain are *A Tour of the Prairies* and *Captain Bonneville*. He had planned a history of Mexico; had collected much material and had written one chapter; but he learned that Prescott was planning the same work and he magnanimously abandoned his intentions. After his return to "Sunnyside," Irving produced his *Life of Goldsmith*, a sympathetic biography which he was peculiarly fitted to write, by reason of the resemblance of his kindly genius to Goldsmith's own; and he also wrote the affectionate and impartial *Life of Washington*, his last finished work.

Irving took no part in public life, but his character won him a place in the affections of the whole nation. His generous nature, his optimism, his loyalty to truth and right are evident in his works and make it easy for us to understand the esteem in which he was held by his contemporaries.

ISAAC, 'zak, one of the Hebrew patriarchs, the son of Abraham, by Sarah. He is remarkable as the offspring of very old age, Sarah being ninety and Abraham a hundred years old at the time of his birth; for his miraculous escape from death as a burnt offering, and for the fraud perpetrated upon him, at his wife Rebecca's instigation, by his son Jacob. He died at Hebron when 180 years old and was buried in the cave of Machpelah, the resting place of Sarah, Abraham and Rebecca. The story of Isaac is told in detail in these volumes in the article **BIBLE**, subhead *Bible Stories*.

ISABELLA OF CASTILE (1451-1504), queen of Castile, daughter of John II of Castile and Leon, and wife of Ferdinand of Aragon. She was a woman of great courage and sagacity and contributed no small share to the many remarkable events of the reign of Ferdinand V, including the introduction of the Inquisition, the discovery of America by Columbus and the final expulsion of the Moors after the conquest of Granada. See **FERDINAND V**.

ISAIAH, i zá'ya, the first of the great Hebrew prophets. His name means salvation of *Jehovah*. He began his predictions in the last year of Uzziah's reign. Of his father, Amoz, we know nothing, and of the circumstances of his own life, but little. He had great influence over the kings and people of Judah, and he is supposed to have died at a good old age in Jerusalem at the begin-

ning of Manasseh's reign. The first portion of the writings that pass under his name consists chiefly of declarations of sins and threatenings of judgments, while the last twenty-seven chapters, together with some previous ones, hold out promises of a glorious future for Israel, and predict the birth of Christ.

ISHMAEL, *ish'ma el*, the son of Abraham, by Hagar (*Gen. XXI*, 8-21). He married an Egyptian wife and had twelve sons and one daughter, who became the wife of Esau. His descendants are called Ishmaelites.

ISH'PEMING, *Mich.*, in Marquette County, fifteen miles west of Marquette, on the Chicago & North Western, the Duluth, South Shore & Atlantic and the Lake Superior & Ishpeming railroads. It is in the vast Lake Superior iron region and has important smelting works, foundries and machine shops and lumber industries. There are two hospitals and a Carnegie Library. Several summer resorts are in the vicinity. The place was settled about 1857, and was chartered as a city in 1873. It is governed by mayor and council. Population, 1920, 10,500; in 1930, 9,238.

ISINGLASS, *i'zin glas*, a tough substance resembling glass in appearance and applicability, made from the swimming bladders of certain fishes—the sturgeon, cod, hake and others. Isinglass is from eighty-five to ninety per cent gelatin. It is reduced to a jelly in a solution of sulphuric acid. In this form it is used extensively as a base for glue and cement. Boiled in milk the jelly is a nutritious food; mixed with other substances and spread on silk it forms courtplaster. The small mica windows seen in stoves are incorrectly called isinglass (see *MICA*).

ISIS, the principal goddess of the Egyptians, the sister and wife of Osiris. As Osiris represented the sun, so Isis was identified with the moon. The ancient Egyptians believed that Isis taught their ancestors agriculture, and accordingly made her an offering of the first cereals gathered. Isis was variously represented in Egyptian art as a woman, with horns of a cow (an animal sacred to her); as crowned with a disk (a heavenly body); as bearing upon her head a lotus flower or a throne and in her hand the sistrum, a musical instrument. She is often shown accompanied by her infant son Horus. She was worshiped first at Memphis and later throughout all Egypt. From Egypt worship of Isis was introduced into Rome by

Sulla in 86 B. C. The abuses it occasioned there caused it frequently to be prohibited, but it was repeatedly revived. The immorality attending it was vigorously lashed in the satires of Juvenal.

ISLAM, *is'lam*, the name by which Mohammedans designate their religion. It is an Arabic word meaning *submission*; by application, submission to the will of God. The term Islam has come to be used generically to designate the whole body of Mohammedan peoples.

ISLAND, *i'land*, in physical geography a term denoting a body of land surrounded by water, smaller in size than the great masses of land known as continents. Islands are divided into two main classes: *continental* islands, lying in proximity to continents, and *pelagic*, or *oceanic*, islands, such as the Hawaiian Islands. A continental island is usually of the same geological structure as the neighboring continent, and contains like vegetation and animal life. Oceanic islands are mostly of volcanic or coral formation. A cluster of islands, such as the West Indies, the Canaries or the Hebrides, is called an *archipelago*.

Largest Islands. The six largest islands of the world, with the approximate areas in square miles, are named below:

Greenland, 827,300	Baffin Land, 236,000
New Guinea, 330,000	Madagascar, 228,000
Borneo, 284,000	Sumatra, 180,000

ISLANDS (or ISLES) OF THE BLESSED, according to Greek mythology, were a group of islands lying somewhere far in the West, peopled by those on whom the gods had conferred immortality. In other words, they were a sort of Greek heaven. There summer was perennial, and all good things were in abundance.

ISLE OF MAN, a British island 227 square miles in area, in the center of the Irish Sea, between the coasts of England and Ireland—twenty-seven miles south of Scotland. It was called Man from *Mannin*, meaning *middle*, referring to its location. The highest point is 2,034 feet above sea level, in a range of hills extending across the island. Mineral riches include a great deal of lead and some iron, zinc and copper. The people are of Celtic origin, known as *Manx* (which see).

There is a separate government for the island, and local officers under an English governor execute the laws. Population, 1931, 60,238.

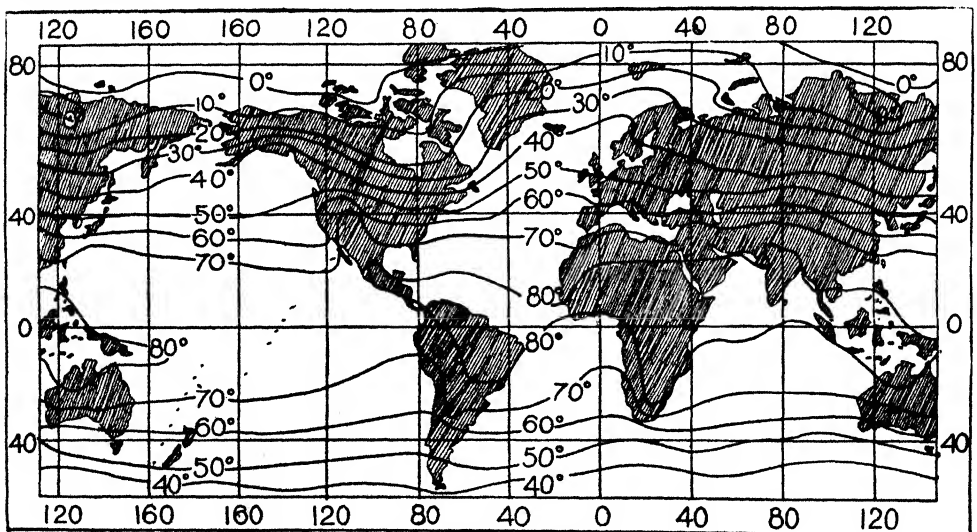
ISLE OF PINES, in Spanish, *ISLA DE PINOS*, is a beautiful island thirty-five miles south of the western section of Cuba, to which it belongs. It is forty miles long and thirty-four miles in greatest width, and has an area of 840 square miles. The population is about 4,000; most of the people are in the two towns of Nueva Gerona, the capital, and Santa Fé which has considerable fame as a winter resort. Forest woods of value are pine, cedar and mahogany; the chief products of the soil are pineapples, and potatoes.

ISLE OF WIGHT, an island in the English Channel, near Southampton, separated from the English coast by the Solent and the Spithead. It is nearly twenty-four miles long, is thirteen miles in greatest width, and the area is 147 square miles. Notable chalk cliffs are at the western end. There is beautiful scenery and a mild climate, which attracts many summer visitors. Population, about 90,000.

neeting places having equal barometric pressure (see **BAROMETER**). Since winds blow toward areas of low pressure, weather forecasters, by referring to maps showing areas of high, low and normal pressure, can make accurate weather predictions. Weather bureaus issue daily charts showing isobaric lines. See **WEATHER BUREAU**; **STORMS**; **WIND**.

ISOCRATES, *isok'ra tees*, (436-338 B. C.), an Athenian philosopher and orator, one of the most famous of the Sophists. He contended that man cannot expect to gain truth itself, but must be content with appearances. The orations and essays of Isocrates are among the most famous of Greek prose writings and were the models on which Cicero formed his style.

ISOTHERMAL, *i so thur'mal*, **LINES**, or **ISOTHERMS**, lines drawn upon maps connecting places having the same average temperature. Maps showing isotherms are constructed on the basis of daily, monthly and



ISOTHERMAL LINES

ISLE ROYALE, the largest of a small group of islands in the northwestern part of Lake Superior, forming a part of Houghton County, Michigan. It is forty-five miles long and nine miles wide, and contains 229 square miles. By steamer the island is eight hours from Duluth and three hours from Port Arthur, Ontario, and it is becoming a popular summer resort. The international boundary is eight miles from the north shore.

ISOBARS, *īso bahrs*, or **ISOBARIC LINES**, lines drawn on weather charts, con-

yearly averages (see **WEATHER BUREAU**). They are of value in forecasting weather conditions. Isotherms do not follow parallels of latitude, because places in the same latitude often have wide variations of temperature. They are explained in the accompanying map. See **CLIMATE**.

ISPAHAN, *ees pa hahn'*, or **ISFAHAN**, *ees fa hahn'*, a very ancient city of Persia, for centuries its capital, situated on the Zende Rud about 210 miles south of Teheran, the present capital. It was once one

of the most important and magnificent cities in the East, but little is now left of its former splendor, most of the city being in ruins. Among the chief structures, some of which rank with the finest in the East, are the palace of Shah Abbas, known as Chehel Situn, the Mesjid-i-Shah, or royal mosque, and a magnificent palace known as Hasht Behesht. The river is crossed by five bridges, one of which is remarkable for its size and architectural beauty. The manufactures are still extensive, including trinkets, firearms, sword blades, glass, earthenware, artistic brass-work, woollens, cottons, velvet and satin. Much opium is produced in the neighborhood, also tobacco and madder. Ispahan is the center of the inland commerce of Persia. Population, about 80,000.

ISRAELITES. See JEWS.

ISRAELS, *ees ra ayls'*, JOSEF (1824-1911), a Dutch genre painter, who depicted with tender pathos the moving dramas in the lives of the Dutch peasants and fisher-folk, was born in Holland, of Jewish parents. He studied at Amsterdam, and at Paris under Delaroche. The first important pictures he produced were *The Cradle* and *The Shipwrecked Mariner*, both of which brought him renown. Other works are *Expectation*, *The Frugal Meal*, *Alone in the World*, *David Before Saul* and *The Toilers of the Sea*. Israels' etchings are notable for simplicity of treatment. See GENRE PAINTING.

ISTANBUL. See CONSTANTINOPEL.

ISTHMIAN, *is'mi an*, **GAMES**, public games of ancient Greece, celebrated on the Isthmus of Corinth. They took place every other year, in April and May. The contests were open to all Greeks, except the Eleans, and were similar to those held at Olympia. They included boxing, wrestling, foot, horse and chariot racing and throwing the discus. The prizes were a wreath of parsley and a palm branch, in the early period, and at a later date, wreaths of laurel. The origin of the games is lost in antiquity, but it is generally believed they were held first in honor of Poseidon (Neptune).

ISTHMUS, *is'mus*, any neck of land connecting two continents or uniting a peninsula to a mainland. Conspicuous examples are the Isthmus of Panama, between North and South America, and the Isthmus of Corinth, connecting the Morea with the mainland of Greece. Its geographical name usually clings to an isthmus after it has been

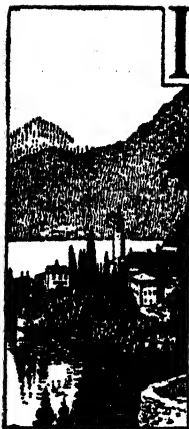
cut by a canal, though it is in reality an isthmus no longer.

ITALIAN LANGUAGE. The Italian language is descended from the Latin through the intermediate stage of the so-called "rustic Latin." This is the name given to the corrupt dialects of the uneducated, which arose after the fall of Rome and the consequent disuse of the language as a standard of literature. The dialects had existed before, but they became predominant only under favoring circumstances. In the twelfth and thirteenth centuries, the poets, especially those of Tuscany, employed Italian, the natural result being that their dialect took precedence over the others. Dante (1265-1321) did much to arrange and consolidate the various elements, and thus, long before most other European languages had reached their full development, Italian received substantially the form it has to-day. In the fourteenth century the language was further perfected by Petrarch and Boccaccio, and in the late fifteenth and early sixteenth centuries prose form became fixed and elaborated in the works of Leonardo da Vinci and Machiavelli.

Italy has now a uniform written language, but the spoken dialects differ widely, sometimes as much as utterly different tongues. The standard aimed at by educated Italians is a combination of the pure Tuscan dialect with the pronunciation of Rome. The broad vowels and the vast preponderance of vowel-endings give to Italian a particularly musical character. This makes it well adapted for singing. The poetic structure of the language, in choice of words and pronunciation, differs more widely from the prose than that of any other European language. The vocabulary is rich in poetic words and in such as were received from classical sources, but in the expression of material things in modern life it is singularly poor.

Reference to the article **LANGUAGES OF THE WORLD** shows Italian to be one of the major languages; only eight, according to careful estimates, are more widely employed. This is the more remarkable when it is recalled that the mother country is small—slightly smaller than the state of Nevada—and its overseas possessions are not numerous; yet its people are prolific, the country is densely populated, and Italy's sons are found in every civilized country on the globe.

ITALIAN SOMALILAND. See SOMALILAND.



ITALY, the central peninsula of the three that project into the Mediterranean Sea from the southern coast of Europe. Politically, this peninsula and a number of neighboring islands, including Sardinia and Sicily, constitute the kingdom of Italy. About the name, Italy, the "Italia" of the poets, there cluster many glorious associations. In ancient days the world's greatest empire had its birth in the Italian peninsula,

when Rome, "from her throne of beauty, ruled the world." Later, in the medieval period, when the Roman Empire had passed into history, the same narrow peninsula became the cradle of the Renaissance movement, which in the full flower of its growth produced that marvelous thing we call Italian art. The tourist who loves beauty, whether it be the beauty of blue skies and bright sunshine, or of noble churches and palaces, or of painting and sculpture, turns with enthusiasm to the land of Italy. It also has its religious associations. Vatican City, within Rome, is the domain of the Pope, temporal ruler and spiritual head of the Roman Catholic Church.

Location, Size, Population. The boundaries as they were established at the time of the formation of the modern kingdom of Italy in 1870 remained unchanged until the map of Europe was partially remade after the World War. During the intervening years Italy resented the possession by Austria-Hungary of a triangular area in the extreme north that the latter country had gained by conquest, called the Tyrol. To Italy it was "Italia Irredenta"—unredeemed Italy. In 1915 a demand was made upon its northern neighbor for the cession of the Tyrol to Italy; when the request was refused, Italy joined the Allies and was an important factor in the defeat of the Central Powers. The peace treaty gave the southern, Italian-speaking, part of the Tyrol to Italy, the new Austria retaining the northern part, where the people were predominantly German. Italy also received the peninsula of Istria, with the port of Fiume.

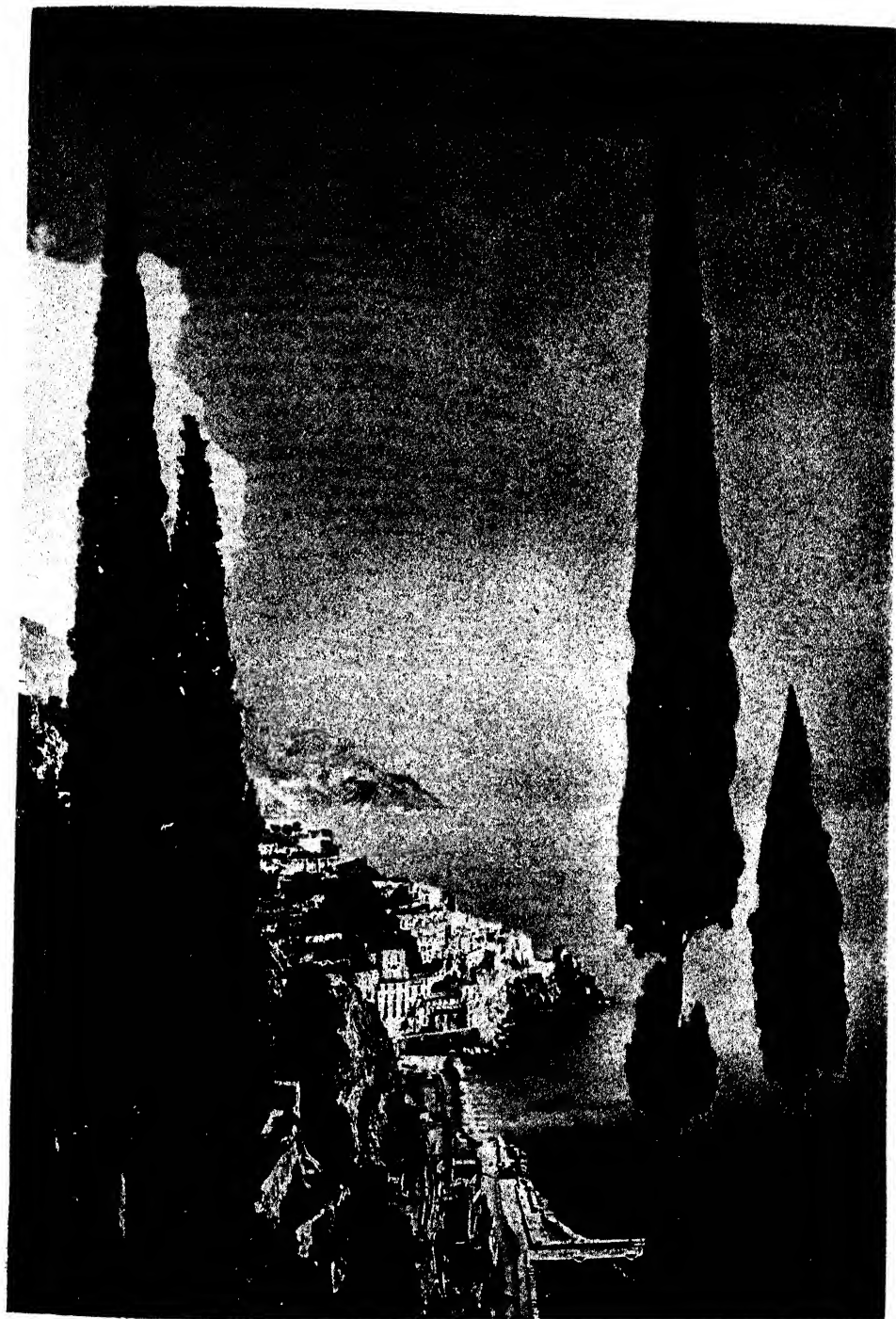
At the north of Italy, with the crest of

the mighty Alps as the trend of the boundary line, lie Switzerland and Austria. To the east is the Adriatic Sea, across from which are Yugoslavia and Albania. France and the Mediterranean Sea are west, and the latter is on the south. Italy with its "boot" and the island of Sicily form almost a land bridge, nearly uniting its land mass with the continent of Africa.

Numerous islands belong to the kingdom, the largest being Sicily and Sardinia; these are nearly the same size, 9,935 and 9,299 square miles, respectively. Including its islands, Italy has an area of 119,713 square miles, making it a little larger than the state of Nevada. Excluding the islands, the land mass is about 92,000 square miles in extent, a little less than the combined areas of Illinois and Indiana. Crowded within these confines are 42,217,000 people (report in 1934).

Surface and Drainage. There is in Italy only one large plain, the valley of the Po, in the northern part of the country. This plain is about 37,000 square miles in area and is almost surrounded by a great curve of the Alps. The mountains of the country may be separated into three divisions: the Alps in the northern part; the Apennines, which are about 800 miles in length and extend through the central part of the peninsula, dividing it into two slopes, a western and an eastern, and the chain which runs parallel to the Apennines in Sardinia and Corsica. Mount Vesuvius, on the Bay of Naples, is the only active volcano on the continent of Europe, while Mount Etna, in the Sicilian continuation of the Apennines, is its loftiest volcano.

The coast line of the peninsula of Italy is about 2,000 miles long, and that of the islands is about 1,945. While the country is well watered, there is but one large river, the Po, which is navigable as far as Turin. Of the other rivers, among which may be mentioned the Tagliamento, the Brenta, the Adige, the Arno and the Tiber, many are but torrents, the beds of which are dry in the summer. Some of the largest mountain lakes of Europe are located in Italy. The Alpine lakes of Maggiore, Lugano and Garda lie only partly in Italy, but Como and Iseo are entirely Italian. The Apennines also contain numerous lakes, many of which seem to have been formed in the craters of extinct volcanoes. Among these Apennine lakes are Trasimeno, Bolsena, Albano and Averno.



AN ITALIAN VISTA

Travel Magazine—Anderson

Reminiscent of the splendors that were ancient Rome is this view along the seacoast of Amalfi.

[See over.]



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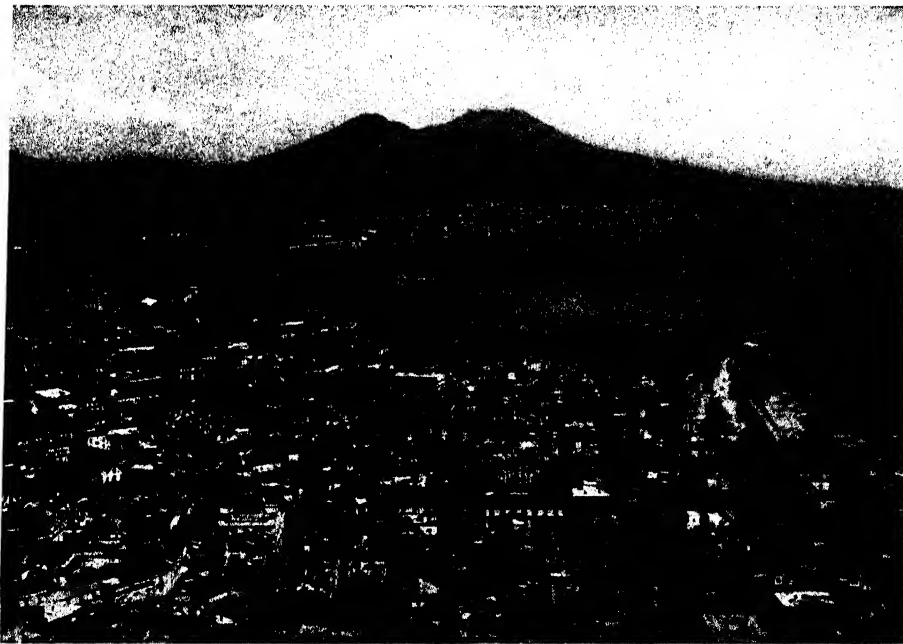
AN ITALIAN VISTA

Reminiscent of the splendors that were ancient Rome is this view along the seacoast of Amalfi.

[See over.]



A FASCIST YOUTH OFFERS TO SHARE HIS LUNCH WITH MUSSOLINI



Underwood & Underwood

THE CITY AND BAY OF NAPLES, WITH VESUVIUS IN THE DISTANCE

[See over.]

Climate. Italy extends through eight degrees of latitude, the southern part being in about the same latitude as North Carolina, and the northern in about the same latitude as Maine. There is therefore considerable variation in regard to climate. The southern part of the peninsula, with its arid, burning climate and its sirocco winds, resembles Africa rather than Europe, while the northern parts have a climate which is practically that of Central Europe. Local conditions, such as the nearness to the sea and the protection afforded on the northern boundary by the Alps, have considerably modified the climate as a whole. In general the most noteworthy features are the absence of extremes of heat and cold and the clearness of the air. This latter peculiarity accounts for the remarkable blueness of the Italian skies. For the most part Italy is healthful, although there are exceptions in the pestilential marshes, the most notable of which are the Maremme in Tuscany, the Campagna of Rome and the Pontine marshes (see below). The rainfall is abundant during winter, but irrigation is necessary in most parts.

Mineral Resources. The mineral resources of Italy are few. Coal is almost entirely lacking, and this prevents the thorough working of such mineral beds as are found. Iron ore is found in some localities. Zinc is mined in Lombardy and Sardinia, and limited quantities of gold, silver and antimony are produced. Sulphur is by far the most important mineral found in the country, and almost all of the world's supply of this mineral is obtained from Italy. The famous Carrara marble, which is largely exported, is found in the Apennines. See CARRARA MARBLE.

Agriculture. Agriculture is distinctly the most important industry of Italy, and the range of latitude and altitude permits the production of all the crops of the temperate regions and many tropical products as well. The length of the warm season in many parts of the country makes possible the raising of two or even three crops during the year. The great plain of Lombardy is the most important agricultural district. Wheat, grown in the more southerly sections, is the principal cereal raised, but there is not enough to supply the domestic need, and large annual importations are necessary. Corn is raised on the northern plain, and rice, oats, barley and rye are also produced, though in limited quantities.

The fruits of Italy are more important than the cereals, and olives, in the production of which Italy leads the world, are the most important agricultural product. Immense quantities of oranges and lemons are grown; almonds are produced in Southern Italy and in Sicily, and in the production of wines Italy ranks next to France. The climate in the northern part is peculiarly adapted to the growth of the mulberry tree, the leaves of which are food for silkworms, Italy being one of the leading countries of the world in the production of silk. Little has been done in stock raising, but in the northern part of the country horses and horned cattle are bred to a limited extent.

From the richness of the soil and the favorable climate it might be expected that Italian farmers would constitute a well-to-do class of people. They are, on the contrary, very poor, for the most part, and receive but small return from their labor, for they must rent from large landowners. Rapidly increasing population provides a problem in human existence in a country long overcrowded. The government has undertaken the task of draining and making productive the historic Pontine Marshes, hitherto a vast, worthless area between Rome and Naples. Scientific operations have rendered habitable enough of this malarial swamp to provide homes for 100,000 people; a new town, Littoria, has been built, and another is planned.

Manufactures. The manufactures include silk, which is made chiefly in the north in Lombardy and Piedmont, woolens, straw goods, coral ornaments, mosaics, jewelry, ivory carvings and marble and alabaster products. The Italians have a special aptitude for art work, and the most of the exports of the country consist of such articles. Macaroni, which is produced in large quantities, is largely consumed at home. In the northern districts, certain varieties of cheese, especially Gorgonzola and Parmesan, are famous.

Transportation and Commerce. There are now 14,250 miles of railway in Italy, under government operation and ownership, partly electrified. The railways are organized into two trunk lines, one on either side of the Apennines, known respectively as the Mediterranean and the Adriatic groups. The extensive coast line of Italy and the fact that all Mediterranean ports and most ports of the East are easily reached, have given Italy a

large carrying trade. Unfortunately for its trade balance, imports exceed exports every year. The three leading countries in its foreign trade are, in order, Germany, United States, and Great Britain. Following these, in fluctuating importance, are France, Yugoslavia, and Switzerland. Italy is not a large producer of capital goods, for it has no coal or iron; it has vast water power, however, which is being developed. Exports to the United States are largely art objects, Carrara marble, olive oil, wines, and straw goods; from that country it receives cotton, agricultural implements, hardware, and machinery.

Inhabitants and Language. The population of Italy is more homogeneous than that of almost any other large country. There are, of course, in Italy numerous representatives of all the other European countries, but their proportion to the native Italians is remarkably small. For the language of Italy, see ITALIAN LANGUAGE.

Education. By law, education is compulsory until the age of fourteen is reached. In the north, where is found the highest range of intelligence, this requirement is rather rigidly enforced, but is less so in the more peasant south. Elementary education extends through eight years, followed by secondary and higher schools. There are twenty-one universities supported by the state, and five that are self-sustaining. The University of Bologna is one of the oldest in the world. In 1088, when it was founded, it consisted only of voluntary groups of students; it was fully organized in 1200. There are six other universities which date from the year 1300 or earlier. Many conservatories of music and art schools attract patronage from almost all nations. The Montessori Method of teaching originated in Rome. See the article under that title.

Literature and Art. See LITERATURE, subheads *Latin Literature* and *Italian Literature*; PAINTING; SCULPTURE, subhead *Italy*; ARCHITECTURE, subhead *Renaissance Architecture*.

Government and Religion. Italy maintains the semblance of a constitutional hereditary monarchy, but since October 30, 1922, the country has been in the power of a dictatorship imposed by Benito Mussolini. On that date he marched upon Rome with his host of black-shirted Fascisti, patriotically determined to save his country from the very real threat of Russian Communism. He threw

out of office the incompetent Cabinet, and imposed his own personal rule. The King was believed to be much pleased with the turn of affairs that had saved his crown and the kingdom, and promptly he named Mussolini as premier.

Since then the government has responded to the will of the dictator. He maintains the traditional Cabinet, and is assisted, in a manner of speaking, by a legislative body chosen largely from members of the Fascist party. The right to vote is in carefully guarded Fascist groups, and parliament always contains a large Fascist majority. Most of the prerogatives of the king are retained, but he is to a degree a figure-head. The royal family retains the affections of the people.

The Roman Catholic religion is the religion of almost all of the inhabitants of Italy. It has an importance here which it has not in other countries, because Rome, the capital of Italy, is the center of the Church. According to the last statistics, the Jews and Protestants number respectively about 47,000 and 82,500.

Colonies. Italy's dependencies in Africa are Tripoli, Eritrea, Italian Somaliland, and Ethiopia. Tripoli is the most important colony. The colonies have an area of about 1,130,000 square miles, and a population of about 12,000,000. See ETHIOPIA.

Cities. The chief cities of Italy are Rome, the capital, Naples, Milan, Turin and Palermo. Others of special interest include Venice, Florence, Leghorn and Genoa.

History. The ancient history of Italy belongs properly under that of Rome. Before the period of Roman supremacy, the country was peopled by various Italic tribes, among which were the Etruscans, or Tuscans, the Umbrians, the Sabines and the Latins. The last-named became supreme and gave their name to the ancient race and language. With the fall of Rome in A. D. 476, begins the history of Italy proper. The invading barbarians proclaimed their leader Odoacer king of Italy, but in 493 they were overthrown by Theodoric the Great, king of the Ostrogoths, who united the whole peninsula under Gothic rule and proved himself a wise and benevolent king. Italy had not seen such prosperity since the earlier glory of the Roman state.

In 552 the Ostrogoths were vanquished by the army of the Eastern Emperor Justinian, under the famous general Belisarius, and

Italy became an exarchate of the government at Constantinople. After the recall of Narses, the first governor, the Lombards, a Germanic tribe, invaded Italy, introduced Germanic feudal institutions and greatly modified the political and social life of the country. About the middle of the eighth century, the Lombards threatened Rome, but were defeated by Pippin, king of the Franks, whose aid had been asked by the Pope. Certain territory was given to the Pope by Pippin, and this gift was confirmed by Charlemagne, who conquered the Lombards and annexed their country to the Frankish kingdom in 774. This gift to the Pope was the beginning of the temporal power of the Church.

In 800 Charlemagne was crowned Roman emperor by the Pope, and the assumption of this title led to the claims of the German emperors in Italy during the following centuries. By the Treaty of Verdun (843), Italy fell to Lothair, and for over a century anarchy reigned throughout Italy, but in 951 Otho the Great reduced the Lombard king to vassalage, and in 961 Otho himself assumed the crown of the Lombards. In the following year he was crowned emperor, thus founding the Holy Roman Empire. The rule of the Germans was never acceptable to the Italians, and from the beginning of the eleventh century frequent revolts occurred against the German emperors, who with difficulty maintained their authority. The Lombard kingdom was gradually resolved into city states, such as Milan, Genoa, Pisa, Florence and Venice. During the eleventh and twelfth centuries arose the famous factions of the Guelphs and the Ghibellines, and the Emperor Frederick I was compelled to relinquish all rights in the cities of the Lombard League (1183). In the latter half of the thirteenth century the German dynasty was completely overthrown, and the kingdom of the Two Sicilies was secured by Charles of Anjou. Italy was at this time prosperous, but this prosperity was marred by the continued feuds and rivalry of the Guelph and Ghibelline factions.

The Guelphs continued victorious and defeated the attempt of Henry VII to restore German supremacy in Italy (1312). This party, however, was torn by disputes and gradually succumbed to petty tyrants. From the middle of the fourteenth century to the end of the fifteenth, the history of Italy as a whole ceases, and we have only the annals of

several powerful states and the famous families who ruled them, among them being Venice, Florence, Genoa, Milan, Naples and Rome, as well as the larger divisions of Sicily and the Papal States. The smaller states dwindled into insignificance.

During the early sixteenth century, Italy was the scene of the struggles between France and the German emperors, of the Austrian House of Hapsburg. These struggles began in 1494 with the attempt of Charles VIII of France to conquer Naples. The Battle of Pavia (1525) decided the struggle finally for the German emperors, who thereafter appointed rulers over the several states. Italy enjoyed comparative peace for one hundred fifty years, during which some progress was made toward national consolidation. Charles V in 1535 secured Milan and Naples for Spain, but in the early eighteenth century Austria acquired both, together with Sardinia, which was later exchanged for Sicily. The condition of Italy, nationally, was one of apathy and decay down to the French Revolution.

In 1793 Italy attempted to join the coalition against France and as a result was reduced to the condition of a dependency. By the Treaty of Campo-Formio in 1797 Napoleon surrendered Venice to Austria and transformed the remainder of Italy into republics. In 1806 Naples was made a kingdom for Joseph Bonaparte, who was succeeded two years later by Murat. From 1809 until 1814 Napoleon's supremacy in Italy was undisturbed.

The Congress of Vienna in 1815 left Italy almost entirely in the hands of Austria and the Papacy, and the wishes of the Italian people for unity and independence were hopelessly crushed by this restoration of the Austrian and the Papal power. Conspiracies and secret societies directed against the foreign rule sprang up almost immediately. The liberal concessions made by Charles Albert after his accession in 1831 to the throne of Sardinia laid the foundation for the ultimate union of Italy under his house. Mazzini made vigorous pleas for national unity, calling upon Charles Albert to act as liberator for his country. The revolution in France in 1848 increased the discontent in Italy, and insurrections were common throughout the country. Naples, Sardinia and Rome were forced to grant constitutional rights, and in Milan the people rose

against Austrian rule and compelled the foreign troops to retreat. Charles Albert now entered Lombardy at the head of his army. The Pope at first supported the movement, and his subsequent change of position weakened the national cause of the fighting force. Charles Albert was defeated at Novara early in 1849, and reaction was triumphant throughout Southern and Central Italy. Only in Sardinia were the liberal reforms continued under the new king, Victor Emmanuel.

Toward the close of 1858 it became evident that Sardinia and France were preparing to ally themselves against Austria, and early in the following year Victor Emmanuel proclaimed his intention to aid in freeing Italy from the Austrian yoke. War began in April, 1859, and the Austrians, after a few smaller engagements, were routed in the great Battle of Magenta, June 4, and compelled to relinquish Milan and Northwestern Lombardy. They were again defeated at Solferino, after which the French emperor, fearing the interference of Prussia, suddenly concluded the Peace of Villafranca. This proposed a confederation of the Italian states under the Pope, but it was rejected by all Italy. In 1860 the duchies of Tuscany, Parma and Modena, whose sovereigns had been driven out, declared for annexation with Sardinia, and Victor Emmanuel was proclaimed king of Italy, March 17, amid great rejoicing. Savoy and Nice were ceded to France to indemnify the country for its share in the war. In May began the conquest of the Two Sicilies by Garibaldi, and in November, Victor Emmanuel formally annexed the provinces which had composed this kingdom. In the Seven Weeks' War between Austria and Prussia, Italy was the ally of Prussia, and after the defeat of Austria, Venetia was added to the kingdom of Italy by treaty. In the following year the Italian volunteers under Garibaldi attacked Rome, but Napoleon III refused to permit the annexation of Rome to the kingdom of Italy.

When, in 1870, France was forced to withdraw its troops from Rome, for use in the war against Prussia, the government troops entered the city, and in July, 1871, Rome became the capital of United Italy. In 1878 Humbert, son of Victor Emmanuel, succeeded to the throne, and he was succeeded in 1900 by his son, Victor Emmanuel III. In 1911 Italy attacked Turkey for alleged injustice to

Italian interests in North Africa; early in 1912 Tripoli became an Italian possession.

The World War. In 1882 Italy had joined with Austria and Germany in the Triple Alliance for common defense. When the World War broke out, in 1914, Italy refused to aid its partners in this Alliance because the terms of the treaty called for intervention only in the event of a defensive war. In May, 1915, Italy joined the Allies by declaring war on Austria, and in August, 1916, war was declared on Germany. Italy's part in the struggle is told in detail in these volumes under *WORLD WAR*, pages 3920, 3922, 3926, 3936. As a result of the Allied victory, Italy received about 9,000 square miles of territory formerly included in Austria-Hungary.

Later Events. The first years after the World War were an extremely critical period, characterized by the breakdown of parliamentary government, class strife and a general collapse of national morale, resulting from war weariness, disappointment over the peace treaty, and the post-war economic depression. The outstanding development of this period is the rise of the Fascisti under Benito Mussolini. Promising to restore order and to revive prosperity, Mussolini organized his followers into an efficient military unit, won the support of King Victor Emmanuel III, and in October, 1922, sent 50,000 "black-shirts" on their historic march to Rome. On October 30 Il Duce (the leader) became Premier, and was soon absolute dictator of Italy.

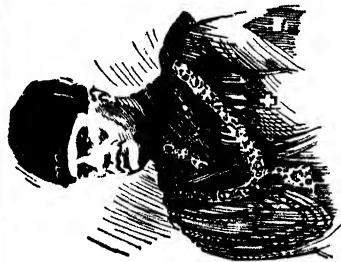
Since the Fascisti coup of 1922, Italy has been transformed into a corporative state. The basic philosophy of this system may be summarized in these words: a single dominant party, the Fascist; a supreme state, and the incorporation of all the economic and intellectual forces of the nation, to be directed toward a common purpose. The Italian Parliament elected on March 25, 1934, was the last to retain legislative powers, as these were surrendered in 1936 to the National Council of Corporations, the future supreme governing body of Italy. All branches of economic life—agricultural, industrial, professional—are grouped into twenty-two corporations, each of which has a governing council.

Mussolini has ambitious plans for making Italy a revived Roman Empire. Recognizing the necessity of settling the religious question, he came to an agreement with Pope

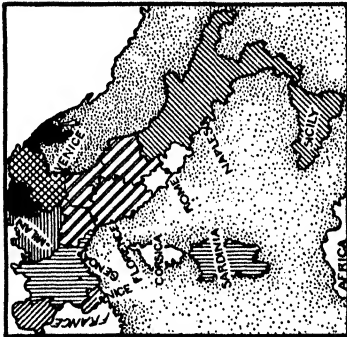
ITALY SINCE 1815



VICTOR EMMANUEL III
PRESENT KING

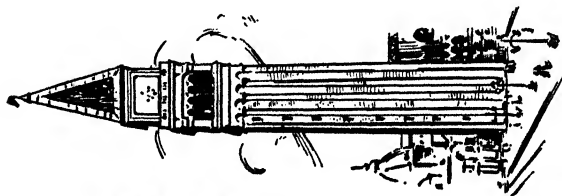


BENITO
MUSSOLINI



GROWTH OF ITALY

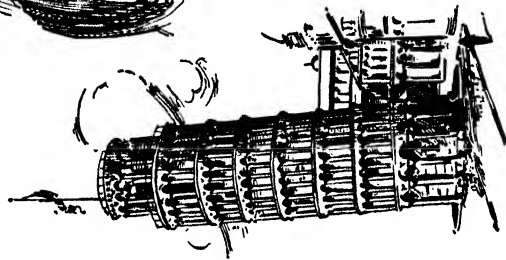
- ▨ Added August, 1859
- ▨ Added May, 1860
- ▨ Added France, 1860
- ▨ Added New Rome, 1860
- ▨ Original Sardinian Kingdom
- ▨ Added 1866
- ▨ Added 1919



CAMPANILE
OF ST. MARKS



KING HUMBERT I
FATHER OF VICTOR EMMANUEL III



LEANING TOWER
OF PISA



MERCHANT FLAG

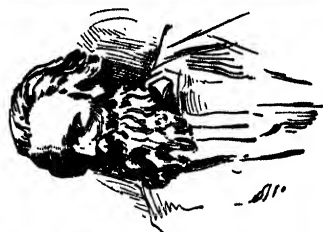
Chronological Summary

Treaty of Paris	1815
Revolution of 1848	1848
Battle of Magenta	1859
Victor Emmanuel Declared King	1861
Garibaldi Invades Sicily	1862
Florence Made Capital of Italy	1864
Unity of Italy Complete	1870
Rome Made Capital	1871
Accession of Humbert	1878
Foundation of Triple Alliance	1882
Accession of Victor Emmanuel III	1900
Italy Entered World War	1915



MAN-OF-WAR

GARIBALDI
THE LIBERATOR



Pius XI in 1929, whereby the latter became temporal ruler of the sovereign state of Vatican City (which see). As a step toward enlarging his colonial domain and providing new fields for an overcrowded population, he forced a war of conquest on Ethiopia in 1935, and in May, 1936, annexed that African country to his kingdom, giving Victor Emmanuel III the title king of Italy and emperor of Ethiopia. Il Duce sent Italian soldiers to Spain to aid the Fascist commander, General Franco, in his rebellion against the Spanish government, and his tactics strained relations between Italy and Great Britain.

Related Articles. Consult the following titles for additional information:

GEOGRAPHY

Adriatic Sea	Herculaneum	Pompeii
Alps	Leghorn	Rome
Apennines	Lombardy	Rubicon
Avernus	Matterhorn	Sardinia
Bari	Messina	Sicily
Bologna	Milan	Sirocco
Cagliari	Mont Blanc	Tiber
Catania	Naples	Trieste
Como	Padua	Turin
Como (lake)	Palermo	Tuscany
Etna	Piedmont	Venice
Florence	Piso	Vesuvius
Genoa	Po	

HISTORY

Ethiopia	Sardinia, Kingdom of
Garibaldi, Giuseppe	Sicilies, Kingdom of
Guelphs and Ghibelines	the Two
Latium	Triple Alliance
Mazzini, Giuseppe	Victor Emmanuel II
Mussolini, Benito	Victor Emmanuel III

ITAS'CA, LAKE, a small lake in Minnesota, long regarded as the source of the Mississippi River. It is about eight miles in circumference, is situated between Beltrami and Cass counties and is surrounded by beautiful pine-covered hills. The Mississippi where it issues from the lake is a stream about ten feet wide and one foot deep. See MISSISSIPPI RIVER.

ITCH, *ich*, an annoying sensation that is too familiar to need description. It is sometimes a symptom of a definite disease, but may be merely a nervous irritation. A modern theory is that itching is caused by pressure upon the nerves lying between the blood vessels and the horny layer of the skin. Increase in the amount of blood in the skin blood vessels or a thickening of the horny layer may cause the sensation, but usually it is the result of the two acting together. To treat a case of itching one should know the source of the trouble. A serious case should have the care of a physician.

A small insect called the *itch mite* is the cause of a contagious skin disease known specifically as itch. Small, watery sacs ap-

pear on the skin and bring on the sensation of itching, and if scratched these sacs cause inflammation of the skin. The insects may be killed with lard and sulphur, while naphthol, oil of cade and carbolic acid are used to allay itching and inflammation.

ITHACA (now **THIAKI**), one of the Ionian Islands of Greece, between the mainland and Cephalonia. It is oblong in shape, very narrow near the middle, and comprises an area of thirty-eight square miles. The country is mountainous, the coasts indented. The inhabitants are agriculturists and mariners. On the slopes are grown grapes, currants, olives and other southern fruits. Ithaca was celebrated as the home of Ulysses, the hero of Homer's *Odyssey*. Recent excavations have brought to light several sites mentioned by Homer. Vathi is the present capital. Population, 11,000. See ODYSSEY; ULYSSES.

ITHACA, N. Y., the county seat of Tompkins County, sixty miles southwest of Syracuse, at the head of Cayuga Lake, on the Lackawanna and the Lehigh Valley railroads, and on a branch of the New York State Barge Canal. There is a fine airport. The city has an especially beautiful location on the shores of the lake and near numerous gorges and waterfalls. Cornell University, located here, has one of the most beautiful sites in the world, lying 400 feet above the lake and overlooking the city and the water (see CORNELL UNIVERSITY). The Cornell Library, the Empire State School of Printing, and the Ithaca Conservatory of Music are other features of interest.

Ithaca is in a productive farming region. The manufactures include machinery, agricultural implements, firearms, adding machines, leather goods, salt, cement, and chains. The first settlement was made in 1789, and it was variously called The Flats, Sodom and The City, until Simon DeWitt gave the place its present name in 1806. Population, 1920, 17,004; in 1930, 20,708, a gain of 21.8 per cent.

ITO, *ee'to*, **HIROBUMI**, Prince (1840-1909), one of the greatest constructive statesmen of modern times, a leading spirit in the reforms in Japanese civilization and methods of government. He visited the United States in 1871 to study the American system of coinage, and on his return to Japan he established the Japanese mint. He was minister of public works in 1873, and he was prime

minister for four terms, the last ending in 1901. He wrote Japan's present constitution, and his *Commentaries* on Japan's fundamental law are pronounced worthy to rank with the American *Federalist Papers*. Ito was a leader in the war with China also in the war with Russia. In 1908 he was appointed Japanese Resident General of Korea, and was virtually ruler of the country. He was assassinated by a native of Korea at Harbin October 25, 1909. See JAPAN, subhead *History*.

ITURBIDE, *ee toor bee'dah*, AGUSTIN DE (1783-1824), for a brief period emperor of Mexico. He was born in Spain, the son of a nobleman. In 1798 he entered the Spanish army in Mexico and fought against the insurrectionists in 1810. After the proclamation of the constitution in 1820, as commander of the Spanish army in the south he intrigued with the revolutionary leaders for the acceptance of the so-called "Plan of Iguala," which contemplated independence of Mexico under a prince of the royal family. Pending negotiations with the royal family, he was placed at the head of a Ministry and became commander in chief of the army. The national Congress was held, and Iturbide, being accepted by the party in favor of the monarchy, was proclaimed emperor, as Agustin I, in July, 1822. His harsh repressive measures led to a rebellion under Santa Anna, and Iturbide was banished. In the following year he returned to Mexico, where a republic had meantime been established, was immediately arrested, and was executed at Patola. See MEXICO, subhead *History*.

IVAN IV, *e vahn'*, called THE TERRIBLE (1530-1584), was a czar of Russia, the grandson of Ivan III. His father died when he was three years old, and under his mother's regency the country became turbulent. At thirteen he assumed the mastery of his dominions, overthrew the revolutionary leaders, and in 1547 assumed the title of czar. His cruelty in dealing with the insurgent princes gained for him his familiar epithet. Ivan did much to improve conditions in Russia, particularly by bringing that country into touch with the civilization of Western Europe.

IVORY, the bonelike substance of which the tusks of the elephant and the teeth, or tusks, of the hippopotamus, walrus and narwhal are composed. Ivory is characterized by a beautiful creamy-white color, hard-

ness and elasticity. It is fine-grained and susceptible of a high polish. The best ivory is taken from the elephants of Africa. The tusks of these males weigh from fifty to 150 pounds each; the tusks of the Asiatic elephant are not so large. Vast quantities of ivory are found among the fossil remains of mammoths and mastodons in Siberia. This, though in a fair state of preservation, is not so valuable as ivory taken from animals that have not long been dead. Celuloid and vegetable ivory (see IVORY PALM) are extensively employed as substitutes for ivory.

Ivory is used in the manufacture of a large number of articles, and has therefore a high commercial value. No other material known has been found so suitable for making billiard balls. Piano keys, cutlery handles, toilet articles and objects of ornament are made of it. It is the ideal medium for carving, and the finest carving of small art objects has been done in ivory. It has been used for small sculptures, called *figurines*, but its rarity makes its use prohibitive for larger pieces. Where ivory articles are manufactured no particle of the material is wasted. The shavings and sawdust are saved and burned to ashes, which are used in making an artists' pigment.

IVORY, VEGETABLE. See IVORY PALM.

IVORY COAST, a French colony in West Africa, lying between Liberia on the west and the British Gold Coast Colony on the east and between the Senegal on the north and the Gulf of Guinea on the south. It has an area of about 180,800 square miles and a population of about 3,859,000 of which the Europeans number about 2,800. The seat of government, formerly Bingerville, is now Abidjan. The principal centers of population and commerce are Grand Bassam and Assinie. The climate is extremely hot and unhealthful, particularly along the seventy miles of seacoast. Maize, plantains, bananas, pineapples and other fruits, besides coffee, are cultivated with success, and there are considerable exports of mahogany, rubber and cocoanuts. There is a deposit of gold near Grand Bassam. A railway runs 494 miles from the coast inland between Abidjan and Dioulasso. There is telephone and telegraph communication between the principal cities, also a wireless station. Under French administration, the resources of the colony have been widely and successfully developed. Among the many improvements in recent

years has been the construction of roads suitable for motor travel.

IVORY PALM, or **TAGUA**, a low palm, native of the warm parts of the earth. It has a creeping trunk from the end of which springs a large handsome cluster of fronds and bunches of fruit, weighing, when ripe

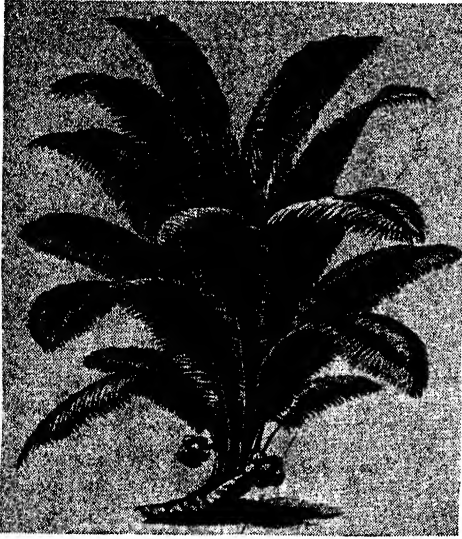
about twenty-five pounds. Each fruit contains within its husk from six to nine seeds as large as hen's eggs, the kernels of which are close-grained and very hard, resembling ivory in texture and color. These nuts are exported under the name of *vegetable ivory*, and they are extensively used in the manufacture of buttons, knobs for doors, umbrella handles and numerous other small articles.

IVY, a climbing plant with five-lobed, glossy leaves, perennially green. The flowers are greenish and inconspicuous and are succeeded by deep green or almost black berries.

The common English ivy is very plentiful in Great Britain, growing in hedges and woods and climbing on stone walls and trunks of trees. Several varieties are grown in American gardens, among them Boston ivy, Virginia creeper and ground ivy. The ivy attains a great age, and its main stems become several inches thick. The wood is soft and porous. The plant has been celebrated from remote antiquity, and in some ancient countries, notably Egypt and Greece, it was held sacred. See **POISON IVY**.

IX'ION, in Greek legend a king of Thessaly, who for his wickedness was punished in the lower world by being tied to a perpetually-revolving fiery wheel.

IZMIR. See **SMYRNA**.



VEGETABLE IVORY



J, the tenth letter in the English alphabet. As a character it was formerly used interchangeably with *i* as either vowel or consonant, and the separation of these two letters in English is of comparatively recent date. Gradually *i* came to represent the vowel sound and *j* the consonant sound. In form also *j* is a modification of *i*. In English *j* has but one sound, a combination of *d* with *zh*, identical with the soft sound of *g*. The *j* sound occurs in such word forms as *jelly* and *gentle*, and in *pledge*, where the *dg* is the equivalent sound. A survival of the Latin sound of *j* occurs in *hallelujah*, with the *j* pronounced like *y*. The modern French *j* has the sound of *zh*, as in *jour*, and the Spanish *j* is like the English *h*. In those parts of the United States originally settled by the Spanish, this sound is perpetuated in such proper names as *San José* (pronounced *ho za'*). See **I**.

JABIRU, a large tropical American stork, about four feet from bill to tail-tip and seven feet across its wings. The head and neck are bare; the rest of the body is covered with white plumage. The jabiru is the only true stork found in North America. Closely allied are two other storks, one Oriental and the other African.

JACANA, *jak'a na*, a class of birds related to the plovers. The birds have extraordinarily long toes and claws which enable them to walk easily on floating leaves of aquatic plants in search of food—small water animals and insects and green sprouts of water plants. Another remarkable feature of the Jacana is its spurs, which protrude at the bend of the wings and constitute useful weapons in the birds' frequent fights with one another. The common South American species is ten inches long. The back and wings are brown, the rest of the body is black. The *surgeon bird*, an Indian species, has a

white head, a body covered with brown and purple plumage and four very long, dark brown curved tail feathers.

JACKAL, *jak'al*, a group of animals belonging to the same family as dogs, wolves and foxes. They are found in Southeastern Europe and in Asia and Africa. Jackals somewhat resemble foxes, having a pointed muzzle, bushy tail and erect ears. They are smaller than wolves, usually being not

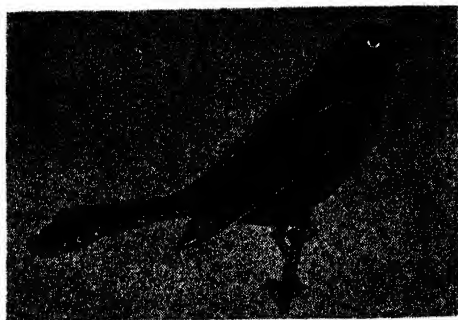


JACKAL

over fifteen inches high from shoulder to ground. The fur is grayish-yellow, somewhat grizzled, and the tip of the tail is dark. Jackals hunt for food at night, traveling in packs, and their cries are dismal howls. They eat almost any kind of animal and vegetable food, including carrion, but the belief that they help lions to capture prey and then feed on what is left, has been proved untrue. A species found in Eastern and Southern Africa, known as the *tenlie*, is valued because of its handsome fur, a mixture of reddish-yellow and black. The jackal is not a courageous animal, and it can easily be domesticated.

JACK'DAW, a small European crow, with comparatively-short bill and whitish eyes. It nests in towers, spires and other elevated places, often in the midst of large towns. Jackdaws are very sociable, intelligent birds, and, being easily tamed, they make enter-

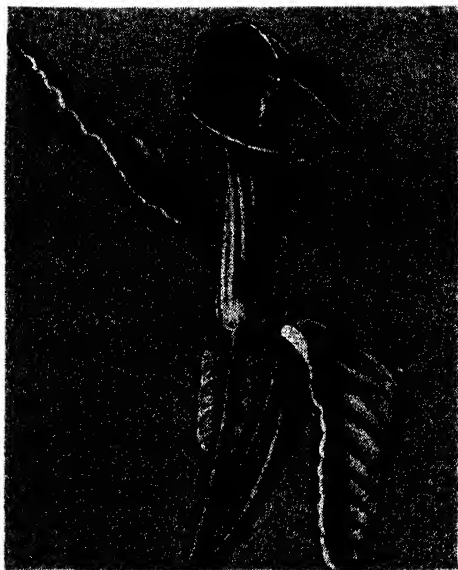
taining pets. Like other crows, they are prone to mischief and accustomed to steal



JACKDAW

small objects that come to their notice.

JACK-IN-THE-PULPIT, or **INDIAN TURNIP**, a common plant of North America that blossoms in early spring in low grounds or along streams. The flowers come from the flattish, turnip-shaped root, the



JACK-IN-THE-PULPIT

juice of which is very biting. The flowers are very small and are grouped closely together at the base of the long, slender stalk, or *spadix*, and around the whole is wrapped a curving, leaflike *spathe* having a peculiar flap that looks like the sounding board of a pulpit; hence the name of the plant. The leaf is greenish on the outside and striped with purple or green within. The flowers

bloom from April to June, and are followed by red berries. Later in the season all parts, excepting the stem and the bunch of scarlet berries, wither. The plant belongs to the arum family.

JACK-O'-LANTERN. See **IGNIS FATUUS**.



JACKSON, ANDREW (1767-1845), an American soldier and statesman, seventh President of the United States. If not one of the greatest of the Presidents, he was one of the most forceful men who ever held the office of chief executive, and in his own day his personality made a striking impression, equal to that produced by such men as

Webster or Calhoun. Jackson has often been compared to Theodore Roosevelt, because of the influence each wielded with the masses. In one respect, however, they were exact opposites. Jackson was born of poor parents in a log cabin, and his schooling was of the most meager character; Roosevelt came of an old, aristocratic family, and had all the advantages afforded by wide education and extensive travel.

Ancestry and Boyhood. The father of Andrew Jackson was one of the pioneer settlers of the Carolinas. He came from Ireland in 1765, and settled on a claim not far from the boundary between North and South Carolina. The limits of the two colonies were then not definitely known, and there is some doubt as to the exact location of the Jackson cabin. The future President, however, claimed that he was born near Waxhaw Creek, in Lancaster County, S. C. The date of this event was March 15, 1767.

The elder Jackson died a few days before Andrew was born, leaving a widow and two older sons. Mrs. Jackson seems to have had no control over her younger child, who fought all the boys in the community, loved nothing better than a cockfight or a horse race. In his fourteenth year he enlisted in a colonial regiment to help finish the Revolutionary War. His two brothers were killed in this struggle, and the mother died of a fever contracted while she was nursing American prisoners.

Early Public Career. After the war Andrew was left to his own devices. He not

only supported himself but was able to complete a course in law, and before he was of age he had been admitted to the bar. At the age of twenty-one he became public prosecutor in the district now forming the state of Tennessee, and in this capacity he made a reputation for firmness and honesty that won him not only strong friends but made bitter enemies. During this period he was married to Mrs. Rachel Robards, the daughter of a Tennessee settler.

In 1796 Tennessee was admitted to the Union as a state. Jackson was a member of the constitutional convention, and was elected sole Representative of the state in the Lower House of Congress, as Tennessee was entitled to but one seat. Though he resigned within a year, he remained in Congress long enough to voice his strong opposition to President Washington. Jackson was a thorough-going Jeffersonian, that is, a pioneer member of the present Democratic party. In 1797 he sought election to the Senate; though successful, he found the routine of the Upper House wearisome and again resigned within a year, and resumed his practice of law. From 1798 to 1804 he served as judge of the Tennessee supreme court, and his career as judge was much like his experience as district prosecutor. Jackson made no pretense to learning, but he was invariably honest and fearless. Between 1804 and 1812 he engaged in the peaceful pursuits of business and managing his plantation, but varied the routine by indulging in occasional quarrels of a violent character. In one of these he killed a man in a duel.

As a Soldier. When in 1812 war was declared against England, Jackson offered his services as the leader of about 2,000 Tennessee militiamen, for since 1802 he had been major-general of the state militia. He went to the front, and began organizing his men at Natchez, but in March, 1813, he was dismissed without pay for himself or his men. Enraged at this treatment, he paid transportation expenses for the troops out of his own pocket, but later the government reimbursed him. A few months after this episode Jackson took command of a company of Tennessee volunteers in a fight against the Creek Indians, defeating them at Horse-shoe Bend, in Alabama. As a reward for this service, in 1814 he received a commission as major-general in the regular army, and was given a command in the South. In

January, 1815, he established his military reputation by the repulse of an elaborate British attack upon New Orleans. It is noteworthy that this battle, the greatest American victory won on land in the War of 1812, was fought two weeks after the treaty of peace was signed.

In the following April Jackson was appointed commander in chief of the United States army in the South. His career for the next few years was stormy. In 1818, while engaged in a campaign against the Seminole Indians in Spanish Florida, he executed two British subjects whom he accused of inciting the Indians, and then seized the city of Pensacola. This episode caused much excitement in England and nearly brought upon Jackson a vote of censure from Congress, but the cession of Florida to the United States, in 1819, brought the dispute to an end. Jackson was appointed governor of the new territory in 1821, and two years later he was elected to the United States Senate from Tennessee. In 1824 he was nominated for President by the state legislature.

Election to the Presidency. The contest for the Presidency was exceedingly bitter, and four candidates received electoral votes—Jackson, John Quincy Adams, William H. Crawford and Henry Clay, in the order named. No one had a majority, however, and the House of Representatives, through Clay's influence, elected Adams. Jackson was bitterly incensed at this, and he and his followers unjustly charged Clay and Adams with having made a dishonest bargain. As a result of the controversy Adams withdrew from the Democratic party and formed the National Republican party (see POLITICAL PARTIES IN THE UNITED STATES). Jackson resigned from the Senate in 1825, and after three years of persistent opposition to Adams, was himself elected President of the United States.

Administrations. The election of Jackson to the Presidency marks an important epoch in American political history, as he was the first real representative of the so-called "common people." During his administration the spirit of democracy was given a tremendous impulse throughout the country, though it was his fate to introduce into American Federal politics that corrupt thing called the "spoils system." The first important event during his term was his re-

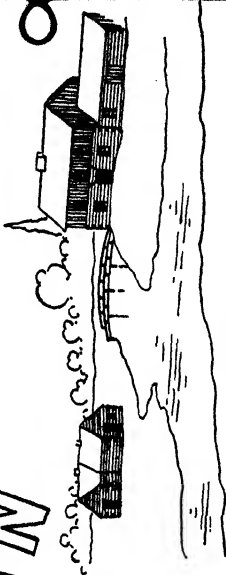
THE FIVE
IMPORTANT
EVENTS

1829

1837

JACKSON

OLD HICKORY



SPOILS SYSTEM
TO THE VICTORS
BELONG THE
SPOILS
ROTATION IN OFFICE
KITCHEN CABINET
POCKET VEToes

**ANTI-SLAVERY
MOVEMENT**
NEW ENGLAND
ANTI SLAVERY
SOCIETY ORGANIZED
"THE LIBERATOR"
GARRISON

U.S. BANK
CHARTER VETOED
SPECULATION
SPECIE CIRCULAR
STATE BANKS
"Pet Banks"
THOS. BENTON



THE FIRST
HARVESTER

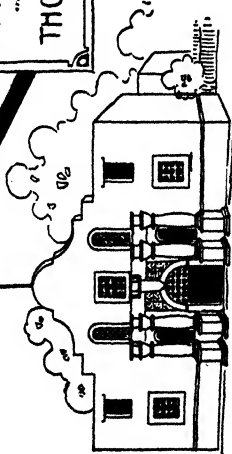
CHICAGO IN 1832

OTHER EVENTS
INDEPENDENCE OF MEXICO
MORMONISM ESTABLISHED
DEATHS: MONROE AND MADISON
TREATY WITH BRAZIL
TEXAS DECLARES INDEPENDENCE
GREAT FIRE IN NEW YORK
CHOLERA VISITS U.S.
ARK. & MICH. ADMITTED

LITERARY
AGE OF AMERICAN LITERATURE
AND CHEAP NEWSPAPERS
BRYANT - WHITTIER
HAWTHORNE - IRVING
LONGFELLOW - COOPER
EMERSON - HOLMES
- POE -
N.Y. SUN FOUNDED
N.Y. HERALD FOUNDED



SEMINOLE
AND
BLACK
HAWK
WARS



ALAMO

Administration of Andrew Jackson, 1829-1837

I. THE PRESIDENT

- (1) Parentage
- (2) Birth
- (3) Youth
- (4) Study and practice of law
- (5) Military career
- (6) Career in public office before he became President
- (7) A representative of the West
- (8) Personal character
- (9) Death

II. GOVERNMENTAL AFFAIRS

- (1) Domestic
 - (a) The "Spoils System"
 - (1) Its introduction
 - (2) Effects
 - (b) Indian affairs
 - (1) Policy
 - (2) Indian disturbances
 - (c) Financial affairs
 - (1) Bank of the United States
 - (a) Opposed by Jackson
 - (b) Removal of deposits
 - (c) Censure by the Senate
 - (d) End of the bank
 - (2) Wild-cat banking
 - (d) The Tariff and Nullification
 - (1) The principle of Nullification
 - (a) Webster - Hayne debate
 - (b) Calhoun's views
 - (2) In practice
 - (a) South Carolina's Ordinance
 - (3) Jackson's Proclamation to South Carolina
 - (4) Compromise Tariff of 1833
 - (5) Force Act
 - (a) Gave President power to enforce the law
 - (b) Led South Carolina to repeal Nullification

(e) Election of 1832

- (1) Parties
- (2) Issues
- (3) Result and significance
- (f) Admission of new states
- (2) Foreign
 - (a) Treaty with France
 - (b) Treaty with England
 - (c) Treaty with Brazil
 - (d) Relations with Texas
 - (1) Texan War of Independence
 - (2) Republic of Texas

III. INTERNAL AFFAIRS

- (1) Anti-Slavery movement
 - (a) The Liberator founded, 1831
 - (b) New England Anti-Slavery Society
 - (c) American Anti-Slavery Society
 - (d) Petitions to Congress
- (2) Growth of Mormonism
- (3) Development of American literature
- (4) Deaths of Monroe and Madison
- (5) Invention of the harvester, 1834

IV. ELECTION OF 1836

- (1) Parties
- (2) Candidates
- (3) Issues

Questions on Jackson

Give a short sketch of Jackson's career before he became President.

Describe his personal character.

What is the "spoils system"?

What was its famous motto?

Who was the Black Hawk?

What was Jackson's attitude toward the Bank of the United States?

What was the principle of nullification?

Who was its greatest exponent?

When did the Webster-Hayne debate take place? What was the subject?

Give a short account of the Texan War of Independence.

What religious movement was coming into prominence?

What was "the Hermitage"?

removal of public officers upon the ground of their political affiliations, in accordance with the doctrine enunciated by his friend Marcy, that "to the victors belong the spoils of the vanquished." His motives deserve less censure than his methods, however, for he sincerely believed that he was working for the good of the country by appointing Democrats to take the place of "aristocrats."

During Jackson's first term Congress passed a high-tariff law that was bitterly resented in the South, where it was feared that the laying of duties on foreign importations would cause reprisals against American cotton in foreign ports. In South Carolina the law was declared unconstitutional and "null and void" by the legislature, and the state threatened to secede if attempts were made to enforce it. Jackson met this threat by sending two warships to Charleston harbor and issuing a proclamation of warning. Though not in favor of protection, he was determined to maintain the authority of the Federal government. The passage of a compromise bill allayed the controversy.

Another mooted question was that of the United States bank. In 1832 the President vetoed a bill for rechartering it, because he was convinced that it was controlled by the "money ring." When, in the same year, he was reelected by a decisive majority, he construed this victory as a popular vindication of his attitude, and promptly set about destroying the institution. All government deposits were withdrawn, which practically put an end to its career, but such arbitrary proceedings did not pass unchallenged. The Senate voted formal resolutions of censure against the President, and they remained on the records until 1837.

Jackson precipitated another crisis by issuing, in July, 1836, a famous "Specie Circular," which forbade government agents to accept paper money in payment for public lands. This order, coupled with an inflation of credit due to loans made to the states out of surplus national funds, brought on the great financial panic of 1837. Unhappily for Jackson's successor, Van Buren, the storm did not break until Jackson was out of office. Other notable events were the removal of the Cherokee Indians from Georgia, the admission of Arkansas and Michigan as states, the rise of the Abolitionists (see GARRISON, WILLIAM LLOYD) and the founding of the Mormon Church.

Upon retiring from office, Jackson returned to his home near Nashville, which he called the "Hermitage." There he passed the remainder of his life, dying in 1845.

Related Subjects. Consult the following titles for additional information:

Banks and Banking	Nullification
Civil Service	Tariff
Democratic Party	War of 1812

JACKSON, HELEN [FISKE] HUNT (1831-1885), an American novelist and poet, born at Amherst, Mass. She was educated in Ipswich and New York and at twenty-one married Major Edward B. Hunt. Her first poems, written at Newport, R. I., after her husband's death in 1863, and signed "H.H.," were encouragingly received. She remarried in 1875 and afterward lived in the West. The most ambitious of her works are the novels *Mercy Philbrick's Choice* (1876); *Hetty's Strange History* (1877); *A Century of Dishonor* (1881), a plea for better treatment of the Indians, and a romance on the same theme entitled *Ramona* (1884). The last named is still widely read. Mrs. Jackson also wrote some books for children and several volumes of poems, among them *Sonnets and Lyrics*. Excepting her novel *Ramona*, her poems probably constitute her best claim to remembrance.

JACKSON, MICH., the county seat of Jackson County, seventy-five miles west of Detroit, on both banks of the Grand River, and on the Michigan Central, the New York Central, the Cincinnati Northern and the Grand Trunk railways. Electric and motorbus lines connect with other cities. Jackson is in an agricultural region, and has a considerable trade in agricultural produce and implements. It is an important manufacturing city. Here are located car shops of the Michigan Central railroad, employing more than a thousand men. Among its 150 factories, the most important are those producing automobile accessories, including wheels, fans and belts; stoves, and flour. A state prison is located here, and there are two hospitals, a Carnegie library, a Masonic Temple and a Junior College. The city was first settled in 1829; it was first named Jacksonburgh in honor of President Andrew Jackson. In 1854, an organizing Convention of the Republican Party, held in Jackson, gives the city the claim of being the birthplace of the party. The city has the commission-manager form of government. Population, 1930, 55,187.

JACKSON, Miss., the capital and largest city of the state, is the county seat of Hinds County, forty miles east of Vicksburg, on the Pearl River and on the Illinois Central, the Alabama & Vicksburg, the Yazoo & Mississippi Valley, the Gulf & Ship Island and the New Orleans Great Northern railroads. The city has handsome public buildings, of which the most important are the state capitol, an imposing structure, the governor's mansion, the Federal building, the state library and the state institutions for the blind, deaf, dumb and insane. Millsaps College (Methodist Episcopal), Belhaven College (for women) and Jackson College (colored) are located here. A large amount of cotton is raised in this section, and the important industries are the cottonseed oil mills, wood-working establishments and manufactories of fertilizers, agricultural implements and other articles. The commission form of government was adopted in 1912. The population in 1920 was 22,817; in 1930, 48,282.

JACKSON, TENN., the county seat of Madison County, eight-five miles northeast of Memphis, on the Illinois Central, the Mobile & Ohio, the Birmingham & Northwestern and the Nashville, Chattanooga & Saint Louis railroads. It is an important trading center for a rich farming district, and contains cotton-seed mills and manufactories of engines, furniture, clothing, and other articles. The West Tennessee branch of the State Agricultural Experiment Station, Union University, Lane College (for Negroes) and the Lambuth College are located here. Population, 1930, 22,172.



The house where
he died

JACKSON, THOMAS JONATHAN (1824-1863), more commonly known as "STONEWALL" JACKSON, one of the outstanding personalities of the American Civil War. Though he never had the opportunity to show his ability as leader of large forces, he was the most able of all the officers

who served under Lee. Jackson was born on January 21, 1824, at Clarksburg, Va. (now W. Va.), of Scotch-Irish parentage. He early showed marked qualities of leadership, and was elected sheriff at the age of eighteen. At about the same time he entered West Point, where he was graduated in 1846

with honors, in a class which included McClellan, Pickett and A. P. Hill. He entered the army immediately, served in the Mexican War and was brevetted captain and major for gallantry in action.

Having resigned from the army in 1851, Jackson became professor of military tactics in Lexington Military Institute. Here he remained until April, 1861, never attaining distinction as an instructor but exerting a powerful influence for good. He was an ardent Presbyterian and gave much of his time and money even while in active service to the betterment of the negroes who belonged to his class in Sabbath School. It is interesting to know that after the war, when a bronze monument was to be raised to his memory in Lexington, the first contribution came from the colored Baptist Church. Jackson personally did not favor secession, but when volunteers were called for to coerce the states he said, "I have longed to preserve the Union and would have been willing to sacrifice much to that end. But now that the North has chosen to inaugurate war against us, I am in favor of meeting her by drawing the sword and throwing away the scabbard."

He was commissioned colonel in the Virginia forces and later placed in command of the Virginia brigade which afterwards became so famous under him. At the Battle of Bull Run, when Jackson was seen fighting valiantly against what seemed to be overwhelming odds, General Bee called out, "There stands Jackson like a stone wall." The phrase was taken up and from that time on Jackson was known as *Stonewall* and his troops as the *Stonewall brigade*. He was promoted to be major-general in September of the same year, and in a campaign in the Shenandoah Valley against General Banks he won brilliant victories at McDowell and Winchester and completely baffled the Federal commanders.

In June, 1862, Jackson joined Lee in the defense of Richmond against McClellan and took a prominent part at the battles of Mechanicsville and Malvern Hill, and, after McClellan's withdrawal, at Cedar Mountain and the second Battle of Bull Run, against General Pope. His force was conspicuous in Lee's first invasion of the North, and at Antietam and Fredericksburg he was a source of great strength to the Confederate army. In May, 1863, at Chancellorsville, he fell upon Hooker's right flank under Howard

and almost destroyed a full corps. At nine o'clock in the same night he was accidentally shot by his own men, while reconnoitering, and died May 10. His loss was a severe blow to the Confederate cause, for he had been a tower of strength in every campaign.

JACKSONVILLE, FLA., the largest city in the state and the county seat of Duval County, 165 miles east of Tallahassee, on the west bank of the Saint Johns River, on the Southern, the Atlantic Coast Line, the Seaboard Air Line, the Florida East Coast and the Georgia Southern & Florida railroads. The ocean beaches near here are among the finest on the Atlantic coast, and the city has long been a popular winter resort. There are many fine churches, also several institutions, among them being Saint Luke's Hospital, Riverside Hospital, a county hospital and a private sanitarium. Other prominent structures are a Federal building, an armory, a chamber of commerce, a Masonic Temple, a Carnegie Library and several club houses and hotels.

The city is an important trading port and ships large quantities of lumber, shingles, cross-ties, turpentine and garden produce. The principal manufacturing establishments are lumber mills, ice plants, fertilizer plants, foundries, brick and tile works, shipyards and various factories. The city is a headquarters for naval stores. The place was settled in 1822 and was named in honor of Andrew Jackson, who was first territorial governor of Florida. It was incorporated in 1833. In 1901 a fire destroyed a great number of buildings, causing a loss of about \$12,000,000, from which the city has completely recovered. Population, 1920, 91,543; in 1930, 129,549.

JACKSONVILLE, ILL., the county seat of Morgan County, thirty-four miles west of Springfield, on the Chicago, Burlington & Quincy, the Wabash, the Chicago & Alton and the Jackson and Havana railroads. The principal manufactured products are clothing, meats, shoes and steel goods.

The city is distinguished for the number of public institutions it sustains. These include the MacMurray College for Women, Illinois College, Routt College, the Passavant and Our Savior's hospitals, a state institution for the blind and another for the deaf, the county courthouse and the city hall.

There is yet standing an old home built shortly after 1830 by Governor Joseph Dun-

can in which Abraham Lincoln, Martin Van Buren, Daniel Webster, Stephen A. Douglas and other men of national reputation were entertained. The "underground railway" of Civil War days had a station at Jacksonville. The place was settled in 1825 and was incorporated in 1867. The corporation is governed by a mayor and council. Population, 1930, 17,747.

JACK-STONES, a game played with five small pebbles, marbles or iron pieces made specially for the purpose. The player lays four of these on the ground. With one hand he tosses the fifth (jack) in the air and before catching it picks up one of the four. Still holding the first one picked up he tosses the jack a second time and picks up another, and so on until all are in hand, the object being not to drop any.

JACK-STRAWS, a game played with from fifty to a hundred small wooden sticks of uniform size but shaped to represent implements and tools, such as hoes, rakes and bars. The players throw the sticks on a table in a heap and each in turn tries with a tiny hook to see how many sticks, lifting one at a time, he can take from the pile without causing any of the others in the pile to move. The player removing the greatest number of straws is the winner.

JA'COB, the son of Isaac, the grandson of Abraham, and the last of the Jewish patriarchs. His story is told in these volumes in the article *BIBLE*, subhead *Bible Stories*.

JACOBINS, *jak'o bins*, the most famous of the political clubs of the French Revolution. When the States-General assembled at Versailles in 1789, a club was formed by a number of deputies from Brittany, called the *Club Bréton*. On the removal of the court and national assembly to Paris it acquired importance and rapidly increased. It adopted the name of *Société des Amis de la Constitution*, but as it met in a hall of the former Jacobin convent in Paris, it was called the Jacobin Club. It gradually became the controlling power of the Revolution, and its influence spread over France, hundreds of branch societies being established. The Jacobins were foremost in the insurrectionary movements of June 20 and August 10, 1792, and they originated the formidable Commune of Paris. For a while they ruled supreme, and the Convention itself was but their tool. Robespierre was their most influential member, and through him they ruled during the

Reign of Terror. After his downfall in 1794 they were overthrown. The term *Jacobin* is now often used to designate any one holding extreme views in politics.

JACOBITES, *jak'o bites*, a Christian sect, the members of which are distributed through Syria, Mesopotamia and Babylonia. The name is derived from that of JACOBUS BARBADAËUS, a Syrian monk who during the reign of Justinian united the scattered adherents to his creed into a single party. The Jacobites number now about 80,000. They are governed by the patriarch of Antioch, who has under him three bishops and eight metropolitans, or superior bishops. The metropolitan of Jerusalem ranks higher than the others, and with the patriarch he lives at a monastery near Mardin. The doctrine of the single nature of Christ is common to them and to the Copts and Armenians. The form of their ceremony differs little from that of the orthodox Greek Church.

JACQUARD, *zha'kar*, JOSEPH MARIE (1752-1834), a French inventor whose fame rests on a machine for figured weaving, known as the Jacquard loom. It was first exhibited in 1801. Jacquard endeavored to introduce it into general use in Lyons, but was mobbed, and almost lost his life. Ultimately, however, his invention was bought by the French government, and he was able to spend the latter part of his life in comfort. See WEAVING.

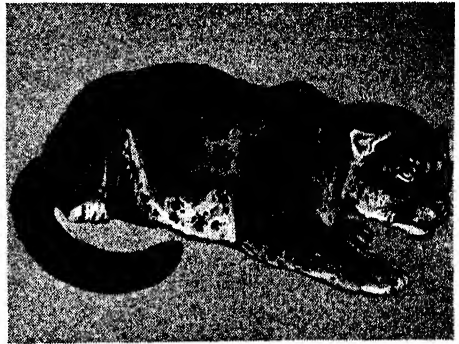
JADE, a tough, compact stone, commonly of a yellow-green color, susceptible of a high polish. It was much employed by primitive peoples for weapons and implements, and among the Chinese it has been widely used for small ornaments; they carve it exquisitely. An inferior kind of jade, called *nephrite*, has been superstitiously believed to possess healing power. *Jadeite* is a very fine quality of jade. True jade contains calcium, magnesium and silica. See JEWELRY.

JAFFA, *yah'fah*, or **YAPA**, PALESTINE, a city of commercial importance, situated on the Mediterranean Sea, thirty-one miles northwest of Jerusalem, with which it is connected by railway. The site of the city slopes toward the sea. The place contains a number of buildings of considerable note because of their architecture. Among them are mosques and churches, several hospitals and hotels. The commerce is of considerable importance, the exports consisting of fruits, wool, wine, sesame and a few manufactures.

Under British administration, Jaffa has experienced a revival of trade and industry, as Palestine's chief port of entry. It enjoys a large tourist trade. The suburb of Tel-Aviv, built and developed by Jewish enterprise, is a modern city with paved streets, water supply, electricity and attractive residences. Population, Tel-Aviv, 46,000; Jaffa, 51,300.

Joppa, as the city was known in Bible times, was then also the seaport of Jerusalem, and it is probable that through that port came most of the wealth that Solomon received from his seafaring expeditions.

JAGUAR, *ja gwahr'* a member of the cat family, found in South and Central America. It is not quite as large as a tiger and is of a yellowish or fawn color, marked with large dark spots and rings, the latter with a dark spot in the center of each. Some species are



THE JAGUAR

nearly black. The jaguar rarely attacks man unless hard pressed by hunger or driven to bay. The favorite haunts are the forest swamps of the Amazon. The skin is valuable, and the animal is hunted by the South Americans in various ways.

JAHN, *yahn*, FRIEDRICH LUDWIG (1778-1852), a German who laid the foundation for physical training in his country. He was born at Lanz and educated at the universities of Halle and Greifswald. His theory that the German nation could be strengthened by giving systematic physical training to the younger generation gained the emperor's approval and support. The open-air gymnasiums established through his influence became a permanent institution far-reaching in its effects. Jahn was active in the war of 1813. In 1848 he was made a member of the national assembly and was one of the leaders in securing German unity.

JAIPUR, or **JEYPORE**, *ji poor'*, INDIA, the capital of the native state of Jaipur, is an important industrial city, situated 148 miles southwest of Delhi. The streets are laid out regularly, and are lighted by electricity, and the waterworks are municipally owned. Pink stucco, in imitation of sandstone, is largely used for building purposes, and Jaipur has the aspect of a modern city as well as many of the picturesque features common to Oriental towns. There are bazaars, banks, colleges and hospitals, and manufactories of textiles, pottery, jewelry and brass work. Population, 1931, 144,179.



JALAP

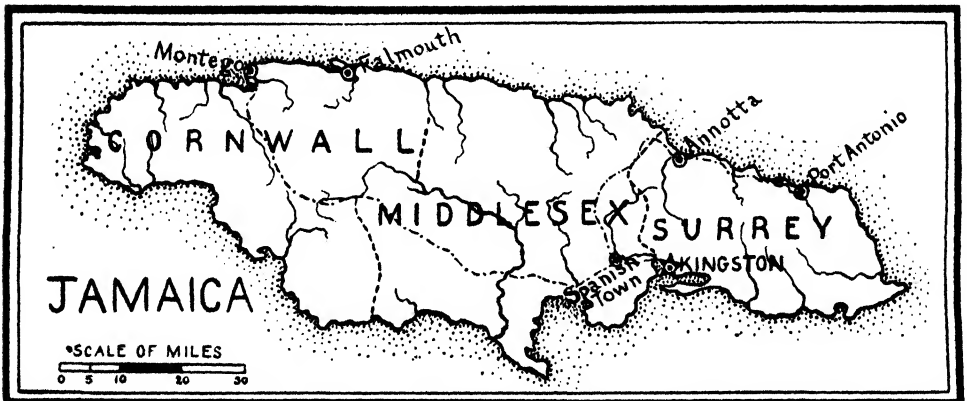
JALAP, a perennial twining plant of the convolvulus order, with heart-shaped leaves and handsome, deep-pink flowers. It grows



JAMAICA, *ja ma'kah*, called by Columbus **SANTA GLORIA**, is a beautiful island of the West Indies, about ninety miles south of Cuba and nearly the same distance west of Haiti. It is Great Britain's most important possession in the Antilles, and has the status of a Crown colony. The island is 140 miles long and a little less than half as wide; it contains 4,450 square miles, is about one-half as large as Massachusetts, and has about

860,000 inhabitants. Of these, only two per cent are white; seventy-five per cent are pure negroes, descendants of slaves transported from Africa; the self-styled colored element, about twenty per cent, is composed of offsprings of whites and blacks, and the remainder are Englishmen and Americans.

The coast line is low and attractive, with green verdure and snow-white roads stretching back to the elevation of the Blue Mountains in the interior, whose peaks are reared 7,000 feet above the blue of the sea.



native on the eastern side of the Mexican Andes, at elevations of from 5,000 to 8,000 feet. It has irregular, dark-brown roots, ranging in size from half an inch to three inches in diameter, which yield a resinous substance containing convolvulin. From this a purgative medicine is made. The roots are the part used medicinally. They are brown and wrinkled when placed on the market, but white and juicy when fresh.

Government under the British is conducted to the complete satisfaction of the native population. The governor is appointed by the Crown for a term of six years. Turks Islands and Caicos Islands are joined with Jamaica in the same jurisdiction. The capital and chief city is Kingston, with about 60,000 people, and a fine harbor.

Jamaica was discovered by Columbus in 1494, and in 1509 the Spaniards settled there.

The native population rapidly decreased during the Spanish régime, and by the middle of the seventeenth century it was almost extinct. In 1655 the island was captured by a British expedition, and in 1670, by the Treaty of Madrid, Great Britain gained possession of the island. In the eighteenth century many negroes were brought to the island for sugar-plantation labor. These negroes rose in revolts and were a great draw-back to the prosperity of the settlements. They were not completely subdued until 1796. In 1831 another negro insurrection occurred, and two years later an emancipation act was passed, providing for the total extinction of slavery after 1838.

The island has been frequently visited by earthquakes and cyclones. The most recent earthquakes were in 1907 and 1918; the former caused 600 deaths and the loss of much property, but the latter was not serious. In 1912 a cyclone severely damaged property on the western half of the island.

JAMES I, of England, who was also **JAMES VI** of Scotland (1566–1625), was the only son of Mary Stuart by her second husband, Lord Darnley. In 1567, on his mother's abdication, he was crowned at Stirling. He had much trouble with his nobles, a party of whom made him captive at Ruthven Castle in 1582; but a counter party soon set him at liberty. In 1589 he married Princess Anne of Denmark. In 1603 he succeeded to the crown of England, on the death of Elizabeth, and was received with great enthusiasm. One of the early events of his reign was known as the Gunpowder Plot (which see).

An unsuccessful attempt was made to unite Scotland and England, and by a decree all Scotchmen born after the accession of James to the English throne were declared English subjects. In 1613, Elizabeth, the daughter of James, was married to the elector palatine, and at the outbreak of the Thirty Years' War it was expected that James

would send aid to his son-in-law, who had been made king of Bohemia. This James seemed unwilling to do, and the little assistance which popular feeling at length compelled him to render was too late to do any good. He wished to marry his son Charles to a Spanish princess, but this project failed, and war was declared against Spain. The king, however, died soon after. In his reign the authorized translation of the Bible was executed and is called King James' version.

JAMES II (1633–1701), king of England, second son of Charles I and of Henrietta Maria of France. In spite of attempts which had been made to exclude him from the throne, because he had adopted the Catholic religion, he succeeded his brother Charles II as king in 1685 and at once set himself to attain absolute power. A rebellion headed by the Duke of Monmouth was easily put down, but the result confirmed the king in his arbitrary measures. He even accepted a pension from Louis XIV, that he might more readily effect his purposes, especially that of restoring the Roman Catholic religion. The result of this course of action was the revolution of 1688, and the arrival of William, prince of Orange. Soon James found himself completely deserted; he quitted the country and repaired to France, where he was received with great kindness and hospitality by Louis XIV. Assisted by Louis, he attempted in 1689 the recovery of Ireland; but the Battle of the Boyne, fought in 1690, compelled him to return to France. All succeeding projects for his restoration proved equally ineffectual.

JAMES, EDMUND JAMES (1855–1925), an American political economist and university president, was born at Jacksonville, Ill. He was educated at Northwestern University, at Harvard and in Germany. In 1883 he became professor of public finance and administration in the University of Pennsylvania. While occupying this position he was chosen by the American Bankers' Association to make a study of European business methods, and his report is considered a standard authority. In 1896 he became director of the extension division of the University of Chicago. Six years later he was chosen president of Northwestern University, and in 1904 he became president of the University of Illinois, filling both positions with high distinction. In 1918 President James announced his resignation as head of the University of



JAMES I

Illinois, and his decision to engage in war work, but he held the office until 1920. He is the author of *The Canal and the Railway*, *The Federal Constitution of Germany*, *Education of Business Men in Europe*, *The Growth of Great Cities in Area and Population* and numerous other works of an economic or sociological nature.

JAMES, HENRY (1843-1916), an American novelist and essayist, an unrivalled interpreter of character. The son of an eminent theological writer, he had exceptional educational advantages. Much of his boyhood was spent in Europe, where he studied under tutors in England, France and Switzerland. At seventeen he returned to America and began the study of law, but soon abandoned it for literature. The last years of his life were spent in England, where he became a naturalized citizen.

As a novelist, James holds an exceptional place in American letters. He was, in his field, as great a psychologist as his brother, Professor William James. There are few dramatic situations in his novels, the action taking place chiefly in the minds and hearts of his characters, most of whom live in an artificial environment and belong to a class with whom suppression of impulse and emotion is the finest of arts, yet who are nevertheless susceptible of the most poignant spiritual tragedies. The earlier novels, which make appeal to the general reader, are *Roderick Hudson*, *The American*, *Daisy Miller* and *The Portrait of a Lady*. Mr. James's more searching exposition of character is seen in *The Bostonians* and *The Princess Casamassima*, while in *The Sacred Fount* his style becomes even more subtle. He was an extremely prolific writer and produced nearly forty other volumes, all of which are distinguished, like his essays, by a fine perception and delicacy of style. His novels are popular with only a small proportion of the people.

JAMES, SAINT, called *the Greater*, the son of Zebedee and the brother of John the evangelist. Christ gave the brothers the name of Boanerges, or *sons of thunder*. According to the Gospels, they witnessed the transfiguration, the restoration to life of Jairus's daughter, the agony in the garden of Gethsemane and the ascension. Saint James was the first of the apostles who suffered martyrdom, being slain by Herod Agrippa about A. D. 42. There is a tradition that he went

to Spain, of which country he is the tutelary saint.

JAMES, SAINT, called *the Less*, the brother or cousin of Christ, who appeared to James in particular after the resurrection. He is called in Scripture *the Just*, and is probably the apostle described as the son of Alphaeus. He was first bishop of Jerusalem, and in the first apostolic council he spoke against those wishing to make the law of Moses binding upon Christians. The progress of Christianity under him alarmed the Jews, and he was put to death by Ananias, the high priest, about A. D. 62. He is the traditional author of the epistle which bears his name, a book written in pure Greek.

JAMES, WILLIAM (1842-1910), an American psychologist, son of a distinguished theologian and brother of the novelist Henry James. He was born in New York and educated at Harvard and in German universities. In 1872 he became professor of anatomy at Harvard, then of philosophy and finally of psychology. Professor James gained a wide reputation by his writings and lectures and was one of the chief American exponents of the new psychology, or psychology viewed from a physiological standpoint. His *Psychology* is a standard text-book in colleges and universities, and his *Talks to Teachers on Psychology* and *The Will to Believe* are among the most readable works of the sort in the English language. Professor James's books are all written in a lucid style which hold the attention of the layman.

JAMES BAY, the southern extension of Hudson Bay, 300 miles long and 160 miles wide. It was named from Captain James, who explored it while trying to find the northwest passage. It has numerous rocks and islands, and its navigation is dangerous. The chief affluents are the Albany and Moose rivers. The country surrounding the bay is little settled. The principal settlements are Fort Albany and Moose Factory.

JAMESON, LEANDER STARR (1853-1917), a Scotch physician and administrator. He received his medical education at London University, and in 1878 he went to South Africa, where he acquired a lucrative medical practice. In 1888 he became associated with Cecil Rhodes and in 1891 was made administrator of Rhodesia. In 1895 he was the leader of the famous "Jameson's Raid," a result of the Uitlander agitation in Johannesburg. His advance was checked, and his

band surrendered. He was taken to England, tried, convicted of misdemeanor and sentenced to ten months' imprisonment. In 1900 he became a member of the Cape Legislative Assembly for Kimberley, and from 1904 to 1908 was premier of Cape Colony. He was made a baronet in 1911. See **SOUTH AFRICAN WAR**.

JAMESTOWN, the first permanent English settlement in America, founded by an expedition sent out under the auspices of the London Company and under the immediate command of Christopher Newport and John Smith. The site chosen was about fifty miles from the mouth of the James River, on a low marshy peninsula, which later became an island, and the landing occurred on May 13, 1607.

In 1619 the town was the meeting-place of the House of Burgesses, the first legislature in America, and Jamestown remained the capital of Virginia until 1699, when Williamsburg succeeded it. In Bacon's Rebellion (1676) the town was partly destroyed, but was rebuilt. With the loss of the capital, the town began to decay, and today only a few relics of its one-time importance remain. The most prominent is the ruined tower of a church built in 1676 on the site of a former church that was the first built in any colony. Jamestown Island is now a national monument, one of three in Virginia which together are called Colonial Monument; the others are Williamsburg and Yorktown, and altogether they comprise a considerable area.

JAMESTOWN, N. Y., in Chautauqua County, sixty-nine miles south of Buffalo, at the outlet of Lake Chautauqua and on the Erie and the Jamestown, Westfield & Northwestern railroads. It is in an agricultural region and has become a popular summer resort. The town is 1,300 feet above sea level—800 feet higher than Lake Erie, twenty miles distant. The extensive manufactures include furniture, metallic goods, voting machines and other articles, while in the production of worsted goods it is one of the leading cities in the state. Jamestown has a Y. M. C. A., a Y. W. C. A., a municipal hospital and the Prendergast Free Library. The place was settled in 1810 and was incorporated as a city in 1896. Population, 1920, 38,917; in 1930, 45,155.

JANESVILLE, *jayn's vill*, Wis., the county seat of Rock County, seventy miles south-

west of Milwaukee and twenty miles from the Illinois state line, on the Rock River and on the Chicago & North Western and the Chicago, Milwaukee, Saint Paul & Pacific railroads. The city is in an agricultural region noted for fine tobacco, and has a large trade in farm and dairy produce. The manufactures include woolen goods, agricultural implements, fountain pens, furniture, sugar, and automobile bodies. It is the seat of the state school for the blind. There are ten parks. The city manager form of government is in operation. The place was settled in 1837 and was incorporated in 1853. Population, 1930, 21,628.

JANUARY, *jan'u a ri*, the first month of the year in the present-day calendar, named for the Roman god Janus, the deity who was invoked at the beginning of all religious ceremonies (see **JANUS**). In the original Roman calendar the year began in March. Numa Pompilius is said to have added January, giving it thirty days, but when Julius Cæsar reformed the calendar he made January the first month of the year and gave it an extra day. It comes soon after the winter solstice, and in most sections of the northern hemisphere is a dreary, cold month. December has many days that remind one of autumn, and February brings thoughts of March and the return of the birds. January, however, is dead winter, with no tokens of fall or spring. Its birthstone is the garnet; its special flower is, appropriately, the snow-drop.

Special Days for Observance. The first day of January, *New Year's Day*, is celebrated in almost every Christian land. Home festivities, calling, family reunions, dancing and theater parties are characteristic New Year's activities. New Year's Eve is quite generally celebrated by gatherings in which the old year is watched out and the New Year ushered in. At midnight the bells ring and there is a happy exchange of greetings.

Twelfth Day (see **EPIPHANY**), the twelfth day after Christmas, is the time of the celebration of the festival of the Epiphany.

Anniversaries for Celebration. The following birthdays of notable people fall in January:

Paul Revere, January 1, 1735.
James Wolfe, January 2, 1727.
Cicero, January 3, 106 B. C.
Joan of Arc, January 6, 1412.
Israel Putnam, January 7, 1718.
James Longstreet, January 8, 1821.

Ethan Allen, January 10, 1737.
 Alexander Hamilton, January 11, 1757.
 Edmund Burke, January 12, 1729.
 Robert W. Service, January 16, 1876.
 Benjamin Franklin, January 17, 1706.
 Daniel Webster, January 18, 1782.
 James Watt, January 19, 1736.
 Robert E. Lee, January 19, 1807.
 Edgar Allan Poe, January 19, 1809.
 John C. Fremont, January 21, 1813.
 Stonewall Jackson, January 21, 1824.
 Robert Burns, January 25, 1759.
 Mozart, January 27, 1756.
 William McKinley, January 29, 1843.
 Ben Jonson, January 31, 1574.

The following important events occurred in January:

United Kingdom of Great Britain and Ireland formed, January 1, 1801.
 Greece declared its independence, January 1, 1822.
 Lincoln issued the Emancipation Proclamation, January 1, 1863.
 Commonwealth of Australia proclaimed, January 1, 1901.
 Utah admitted to the Union, January 4, 1896.
 First United States Presidential election, January 7, 1789.
 President Wilson addressed Congress and stated fourteen points for which the United States was fighting, January 8, 1918.
 England adopted penny postage, January 10, 1840.
 Norway united with Sweden, January 14, 1814.
 Queen Elizabeth crowned, January 15, 1559.
 British Museum opened, January 15, 1759.
 Discovery of gold in California, January 19, 1848.
 First session of English Parliament, January 20, 1265.
 Abdication of emperor of China, January 20, 1912.
 Edward VII became king of England, January 22, 1901.
 George V of Great Britain died January 20, 1936; Edward VIII proclaimed king.
 Beginning of Webster-Hayne debate, January 25, 1830.
 Michigan admitted to the Union, January 26, 1837.
 Canadian Great Western Railway opened, January 27, 1854.
 Paris surrendered to the Germans, January, 28, 1871.
 Kansas admitted to the Union, January 29, 1861.
 Count von Bernstorff announced the inauguration of unrestricted submarine warfare, January 31, 1917.

JANUS, an ancient Roman divinity, whose name was invoked at the beginning of any important undertaking. After him the first month of the year was named. He was held in uncommon reverence by the Romans, and as the guardian of doors and gates he was usually represented with two faces, one look-

ing forward, the other backward. In time of war the gates of the chief temple of Janus at Rome were always left open, and in time of peace they were closed. The ninth day of January was celebrated in his honor for several centuries.



JAPAN, *ja pan'*, an island empire lying east of the continent of Asia, the only Asiatic country which has successfully adopted the organizing methods of Western nations. Until the second half of the nineteenth century Japan was as remotely separated from Western modes of thought as was China. To-day it is the supreme power in the East, and a world

power second only to the United States and Great Britain, with a modern army and navy and a great merchant marine. The rise of Japan is undoubtedly one of the outstanding wonders of recent history, and one destined to have no small influence on the trend of events.

Make-up of the Empire. Japan proper consists of four large and numerous small islands, but these are only the nucleus of an empire covering 260,644 square miles, an area somewhat greater than the combined areas of Oregon and California. An aggregation of about 4,000 islands, the empire stretches in a narrow chain for 2,000 miles along the eastern coast of the continent of Asia, with its northern tip almost reaching the latitude of Kamchatka, and the southern extremity extending south of the Tropic of Cancer. Besides this chain of islands, the empire includes the Asiatic peninsula of Chosen (formerly Korea), the southern half of the island of Sakhalin, the island of



Formosa, and the puppet state of Man-chukuo, on the mainland. In 1930, the population of the empire was 90,396,000.

The four principal islands of Japan proper are as follows: Honshu, or Hondo

(86,953 square miles); Kinshiu (13,870); Yezo (30,340); and Shikoku (8,907). The Kurile Islands, the group farthest north, obtained from Russia in 1875; Formosa, the most southerly island, acquired from China in 1895; the Loo-choo group, between Japan proper and Formosa, acquired from China in 1874; Chosen and Sakhalin, are treated in these volumes in separate articles, as is also Manchukuo, Japan's new state on the continent. This article will be confined chiefly to Japan proper.

The Japanese People. With the exception of the wilds of Yezo, peopled by 12,000 Ainos, Japan proper is inhabited by a single race, speaking various dialects of the same tongue. Like the Chinese and Koreans, the Japanese are Mongolians. It is believed by some authorities that they represent the inter-marriage of victorious Tartar settlers, who entered Japan from the Korean peninsula, with Malays in the south and people of the Aino race in the main island. Japanese annals contain tales of constant war with savages, and in comparatively recent times the Aino race occupied the northern extremity of Hondo. There are two distinct types of Japanese face, that which is found in art designs being the aristocratic and rarer type. It is distinguished by an oval head and face, rounded frontal bones, a high forehead, a nose curved and well shaped but not prominent, narrow and slightly oblique eyes, with an overlapping of the eyelid. In the man the face is almost hairless, with the exception of a narrow and short mustache. The complexion is pallid or slightly olive, and the expression is demure. The commoner type, almost universal in the northern districts, is full-eyed, flat-nosed and good-humored in expression.

The stature of the race is small, and the trunk is proportionately long as compared with the legs, which are short. Intellectually, the Japanese are quick and alert. They are invariably of a pleasant temperament and readily adapt themselves to new conditions. This characteristic has been of the greatest importance to the nation in enabling it to introduce and profit by Western civilization, and it accounts very largely for the rapid development which the Japanese have made. The basic traits of their character, however, are unchanged. (For a more intimate picture of these people consult the article **TRAVELS IN DISTANT LANDS**, subhead *Japan*.)

The Japanese language, like the people is the result of the combination of a number of languages, including the Tartar, Mongolian, Manchurian and Tungusic tongues. It differs from the Chinese in being polysyllabic. The alphabet contains forty-seven characters; the verb usually follows the noun, and the language is inflected. It is written in two forms, known as the *Kata-kana*, or half-letter signs, and the *Fira-kana*, or full-letter signs. The former is much the simpler and is sometimes known as man writing. The Japanese language is somewhat difficult to learn, because its mastery necessitates the learning of a large number of different forms, known as idiographs. Students of the language believe that should it be written in the English alphabet, its mastery would be very much easier.

Surface and Drainage. The four main islands form approximately a crescent and are separated from each other only by narrow straits. Their surface is mountainous, and the trend of the main range of mountains is in the same direction as the greatest extent of the islands. Hondo, about 700 miles in length, is characterized by a continuous mountain range, extending from the southwest to the northeast. In this, as well as in the other islands, this range is crossed at intervals by short ranges, extending north and south, and where these ranges meet the mountains are the most numerous and reach their highest altitudes. The islands are of volcanic origin, and among the mountains are many extinct volcanoes, as well as some that are still active. Fujiyama, sixty miles southwest of Tokyo, with an altitude of 12,390 feet, is the highest peak in these islands; it is famous for the symmetry of its cone and the distance from which it can be seen at sea. In Formosa, Mount Morrison rises to the height of 13,595 feet. The mountain ranges and many peaks are separated by deep valleys with steep slopes, through many of which flow rapid streams. The level land is along the lower courses of the streams and near the coast. This and most of the mountains are covered with forests and tall grass, except where the land is suitable for tillage.

In general, the rivers are short and rapid and are navigable for only a short distance. The longest stream is the Ishikari, in Yezo, which has a length of 275 miles. The Shinano Gawa in Hondo is the second stream in importance, with a length of 215 miles. The others seldom exceed 100 miles, and some are

much shorter. While not useful for commercial purposes, most of these streams are of value as furnishing means for irrigation. In the mountain sections many picturesque lakes are found. The most important is Lake Biwa, in the south-central part of Hondo.

Climate. On account of its great extent north and south, the climate of Japan varies from sub-tropical, in the vicinity of Formosa, to sub-arctic, in Sakhalin and the Kurile Islands. The central part of the empire has an equable and moderate temperate climate, due very largely to the influence of the warm current in the Pacific Ocean. In the northern islands the winters are severe and the snowfall is heavy. In Hondo, Shikoku and Kiushiu, more or less snow falls throughout the winter, but in the southern half of Hondo it remains only a short time. The rainfall depends largely upon the winds; hence the necessity for irrigation during certain seasons of the year. The climate is healthful, although the summers are hot.

Mineral Resources. From 28 million to 32 million metric tons of coal are mined yearly (a metric ton is 2,204 pounds). Iron is scarce; only about a million tons of pig iron and two million tons of steel are produced each year. Copper production averages 75 million kilos; silver production is about 175 million grammes. Of crude petroleum the annual production is about 300 million liters.

Fisheries. The streams as well as the coast waters abound in fish, and the taking and curing of these gives employment to a large number of people. Many varieties of fish are caught, the most important including mackerel, sturgeon, haddock, halibut and salmon, in the north, and perch, pike and trout, in the streams. Fish culture is given careful attention by the government, and numerous hatcheries are maintained. The yearly production of fish and fish products is valued at more than \$150,000,000.

Agriculture. Only seventeen per cent of the country is suitable for tillage, and farming is on the intensive plan. Naturally much of the soil is unfertile, but by means of fertilization known to the Japanese, careful irrigation and thorough tillage this is made to produce abundant crops. Rice, the Japanese "staff of life," is the most important food crop, and is grown wherever the land can be sufficiently irrigated. Following this cereal are barley, rye, wheat, corn, buckwheat and

millet. Potatoes, soy beans and all sorts of vegetables are also grown. Tea is raised in the central part of the empire, and fruits common to the temperate regions are grown to some extent, though they do not seem to thrive as well as upon the continent of Asia. The mandarin orange and persimmon are exceptions to this rule. Cherry and plum trees are cultivated for their blossoms. Considerable sugar cane is raised in the southern portion.

The growing of live stock has not in the past received very much attention because of lack of grazing areas, but within recent years the government has introduced cattle for food, and meat, butter, cheese and milk are now a part of the diet of the well to do. Among the poor, fish is the chief animal food. Silk is produced in those regions adapted to the growing of the mulberry tree.

Manufactures. The manufacturing industries of Japan may be classed as original and introduced. The original are those which have existed from ancient times. The chief of these industries are pottery making, weaving, embroidery, lacquer work, paper industry, metallic industry, leather work, wood and bamboo work, carving, camphor producing, vegetable wax making, salt making, sugar making, saki brewing, soy brewing, oil producing and tobacco manufactures. It is probable that these industries were introduced from China and Korea, but the original trace has been obliterated. The scope of the work is generally small and is done with rude and simple instruments, especially in the fine arts. The artisans use their residences for workshops and employ only a small number of apprentices. The process of manufacturing is very tedious, but the taste and magnificence of purely Japanese arts are admired throughout the world.

The principal introduced industries, that is, those brought from America and Europe, include spinning, glass work, brick making, preparation of drugs and chemicals, cement making, ship-building and machinery, match, paper and soap manufacture. These industries are generally carried on in a large factory employing many workmen and utilizing water and steam power, thus forming a decided contrast to the native industries. The latest returns show the number of factories and workshops belonging to companies and individual persons to be many thousands, with millions of capital. The textile-produce-



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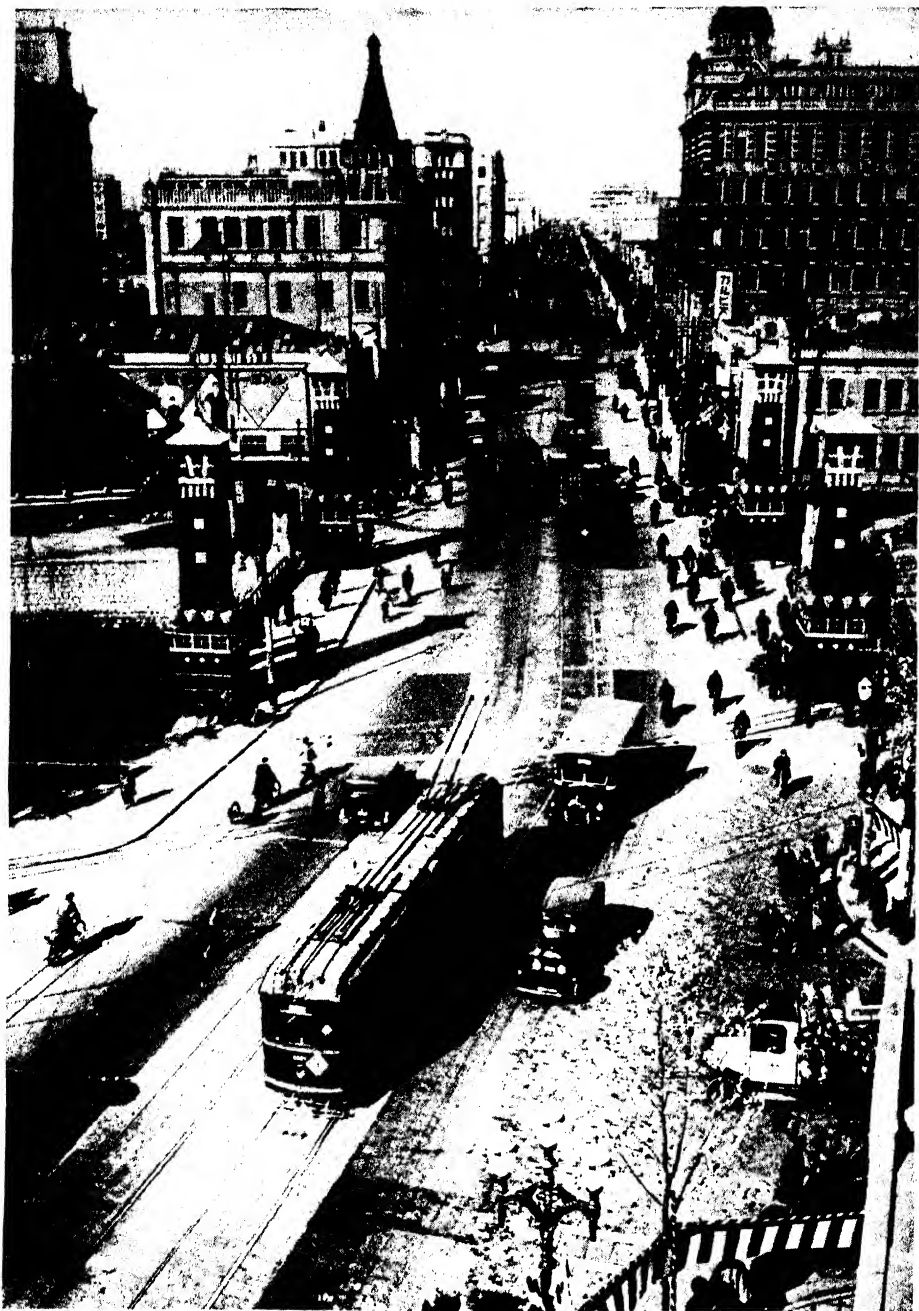


Ewing Galloway

JAPAN

Above: (at left) Emperor Hirohito, in ceremonial robes, yellow in color; (at right) the Empress of Japan, also in full ceremonial dress.

Below: Fujiyama, the sacred mountain of Japan; 60 miles west of Tokio; 12,395 feet high.



Underwood & Underwood

VIEW OF THE GINZA, A BUSY THOROUGHFARE IN TOKYO

The modern structures of Western design, especially constructed to resist earthquakes, were erected after the destructive earthquake of 1923.

ing factories, especially those devoted to cotton and silk manufactures, number about 21,000. Japan provides the world with about sixty per cent of its silk; one of the largest rayon mills in the world is in Osaka. Other important works are for the manufacture of tobacco, porcelain, earthenware, matches and bricks. There are numerous government workshops under control of various departments, such as the imperial mint, the printing bureau, the Tokyo arsenal, the Osaka arsenal, and the woolen-cloth factory. Japan is rapidly increasing its naval and military equipment, in preparation for eventualities.

Women work side by side with men in all industries, government and private. The hours of labor are very long, the wage scale is very low, and penury is the rule among the laboring millions. In such circumstances, health conditions are usually below normal. A few attempts to secure legislation to reduce the hours of work have achieved only slight beneficial results. Strikes in Japan are illegal, and labor unions are strictly forbidden.

Transportation. The first line of railway in Japan was constructed from Tokyo to Yokohama in 1872, and from that time to the present both the government and private corporations have been engaged in extending railway lines, so that now all of the principal cities on the large islands have railway connection with each other. The empire contains 13,987 miles of railways, over 9,500 miles of which belong to the government. The extensive coast line and numerous good harbors give Japan unusual facilities for communication by sea, and it maintains a large merchant marine, consisting of over 3,350 steamships and about 15,000 sailing vessels. Japanese lines of steamers ply regularly between the leading ports of the empire and the Pacific ports of the United States, and between Japan and India and Europe. In addition to these, the lines of other commercial nations make regular trips to the leading Japanese ports. Through the American and British Pacific cables there is also telegraph communication with the entire civilized world. To excellent telephone and telegraph facilities the radio has been added; the Japanese were among the first people to recognize its worth. Airplane activity is largely limited to the army and navy, but there the service more than doubled within five years ending in 1935.

Commerce. The commerce is extensive and is increasing. The construction of railways has widely extended the trade within the islands, since it enables the manufactures to be distributed. The foreign trade amounts to over \$2,000,000,000 annually. Of this amount over half is in imports. In both imports and exports the trade with the United States is more than twice as great as with any other nation. Among exports are raw silk, cotton yarn, floss silk, manufactures, copper, rice and tea. Leading imports include raw cotton and seed, sugar, iron and steel and other manufactures, including arms and machinery, fibre and pulp for paper.

Government and Religion. The present government is a constitutional monarchy based upon the constitution adopted in 1889, and in its form and functions it closely resembles the government of the late German Empire, after which it was patterned.

The emperor remains the source of all laws, in so far that without the imperial approval no parliamentary measures can become law, but the making of laws is the function of the Diet, and no law can be put in force without its assent. The emperor determines the organization of every branch of the administration, appoints and dismisses all civil and military officers and has the supreme command of the army and navy. The government is strongly militaristic.

The Japanese parliament consists of a House of Peers and a House of Representatives, together called the Imperial Diet, which hold an ordinary annual session of three months—which, however, may be extended by imperial orders—and extraordinary sessions in urgent cases. For the upper house there are four classes of members: (1) members of the imperial family, holding office for life; (2) counts, viscounts and barons, not less than twenty-five years of age, elected by their fellows for seven years; (3) members nominated for life by the sovereign for meritorious service or for erudition, and above the age of thirty; (4) commoners elected in the prefectures and urban districts, one for each district, by the fifteen largest taxpayers. The lower house consists of 466 members, elected by popular vote.

The suffrage is limited to males not less than twenty-five years old, who must have resided in the district at least a year before registration; before 1925 payment of property tax or income tax was a requisite to

voting, but this limitation was in that year abolished. Candidates for election must be at least thirty years old. The duration of each parliament is four years, unless previously dissolved. Members of the government may sit and speak in either House, but can only vote in that of which they are members. For the purpose of local administration the country, with the exception of Yezo and Formosa, is divided into forty-six districts, each having a governor and a local assembly elected by the people. These districts are again subdivided into villages, towns, municipalities and counties, each having its chief magistrate, council and assembly.

The religions of Japan are Shintoism, Buddhism and Christianity. Entire religious freedom is granted, and Christianity is making rapid progress. By far the largest proportion of the inhabitants are devotees of Shintoism or Buddhism. The former is a religion based upon the worship of the goddess from whom the emperor is supposed to have descended. It is a mild form of spirit and ancestral worship and is the original religion of the country. Buddhism was introduced from China and engrafted upon Shintoism. Later this was modified by the introduction of Confucianism. While the government has not forbidden the extension of Buddhism, in 1868 it ordered the destruction of all Buddhist symbols and images in temples which had formerly been consecrated to Shintu.

Education. Education is general and compulsory. Women are educated with nearly as great care as men. There is a complete system of kindergarten, elementary, middle and high schools, and five imperial universities, at Tokyo, Kyoto, Fukuoka, Hokkaido, and Kyushu, receive government support. There are special, technical and professional schools, and mission schools are also doing excellent work. The elementary school course extends over eight years (six to fourteen), four years being devoted to an ordinary and four to a higher course. The printing press is very active and daily newspapers abound.

Literature and Art. The oldest literature dates from the fifth and sixth centuries and is devoted almost entirely to the promulgation of religious doctrines. This continued until about the ninth century, when the introduction of Buddhism caused the development of another literature, based almost entirely upon the Chinese and containing many Chinese

words. This was considered for centuries the classic literature of Japan and was learned and taught, but in the seventeenth and eighteenth centuries there was a revival of Shintoism in its pure form. The followers of this school attempted to establish a literature in pure Japanese, but they were not very successful. Later, as the nation came in contact with Western civilization and imbibed Western ideas, Japanese literature took on a new form, with many modern tendencies. This literature was at first repudiated by the educated class, but it has continued to gain in extent and influence, and at the present time Japanese literature embraces a wide range of subjects, including history, science, geography, religion, philosophy, drama, romances and poems. There are also numerous reference works compiled in the language, such as dictionaries and encyclopedias. The Japanese are especially fond of drama, and this class of literature has received considerable attention, most of their dramas being founded on national events. Critics of Japanese fiction assert that it contains many creditable works.

Japanese art has a wide range, as shown in their lacquer and pottery ware, carving in ivory and wood, the extensive ornamentation of their temples and other buildings, all of which are constructed of wood. Painting is universal. In its principles, style and technique Japanese painting resembles quite closely that of China, but in the selection of subjects it is original. Many art critics consider that it takes very high rank because of the excellence of its decorative applications, but it falls far below the standard of painting in modern Europe in completeness. In applications, Japanese art does not vary in important respects from that of European nations. Wall paintings are represented by pictures drawn upon sliding panels, which occupy the place of doors and walls in European and American dwellings. Often portions of the solid wall are ornamented in a similar manner. Painted screens also constitute an important feature of the decorative furniture of rooms. Another mode of decorating is that on fans. Books and rolls made up of drawings, with or without manuscripts, and loose sketches are made in unlimited numbers. Designs for engravers, for workers in embroidery and lacquer, for pottery and for sculptors are first made by painters. Much of the painting is executed

on silk and paper especially prepared for the purpose. Pictures executed in embroidery, and cloisonne enamels are Japanese products.

Cities. Tokyo, the capital, through annexations in 1932 is now the third city in population in the world (5,312,000). Osaka is the world's ninth city (2,453,575). Other large towns are Nagoya (907,400), Kobe (787,600), Kyoto (765,140), Yokohama (620,300). No other city exceeds 300,000.

History. The reputed founder of the present dynasty in Japan was Jimmu Tenno, who ascended the throne in 660 B. C., but all Japanese history before A. D. 500 is to be classed as legendary. In A. D. 552 Buddhism was introduced from Chosen (then Korea) and became, forty years later, the established religion. In the sixth century, direct relations were entered upon with China, and Chinese culture was rapidly assimilated. During the five centuries which ensued, the people made immense strides in civilization. A complete system of officialdom was organized under the rule of the Fujiwara family, whose members filled all the chief posts under the government.

The loss of power of this family and the growing weakness of the government favored the rise of the hitherto subordinate military class, which in the person of Yoritomo, who was created *shogun*, or general, in 1192, seized the reins of power. The usurpation of supreme authority by this officer led to the erroneous belief in Europe that down to 1868 there were two emperors in Japan, a *mikado*, or spiritual emperor, who did not govern, and a *shogun*, who really governed, though he paid formal homage to the mikado.

From the thirteenth to the beginning of the seventeenth century Japan was torn by civil strife. The military fiefs organized by Yoritomo raised up a feudal baronage, who succeeded in making themselves virtually independent of imperial power. At one time (1336-1392) two dynasties held sway, one in the North and one in the South. The shogunate itself lost its importance, but the military genius of Hidéyoshi prepared the way for its revival by Iyéyasu, the illustrious general and statesman, who gave a lasting peace to Japan. Iyéyasu in 1600 fixed his seat of government at Yedo, and, backed principally by the northern clans, was able to consolidate his power and to found a per-

manent succession, his dependents ruling at Yedo until 1868. From a collection of small, scattered villages this place soon grew to one of the most populous cities in the world.

The Portuguese, who first landed in Japan shortly before the middle of the sixteenth century, carried on a lucrative trade, but the ruling powers took alarm, ordered away all foreigners and forbade the introduction of the Christian religion (1624). The Portuguese continued to visit Japan until 1638, when they and their religion were finally expelled. From this time the Japanese government maintained the most rigid policy of isolation. No foreign vessels might touch at Japanese ports under any pretense, and Japanese sailors wrecked on any foreign shore were with difficulty permitted to return home. In 1853 Commodore Perry entered a Japanese harbor with a squadron of United States war vessels. He extorted a treaty of commerce from the shogun in 1854, and other countries followed the example of the United States until sixteen in all had obtained the same privileges.

The discontent which had for long been felt with the shogun gradually became general, and in 1867 he was compelled to resign. Yedo was recognized as the capital of the remodeled government, but its name was changed to Tokyo. Educators from the United States were invited to found a new educational system in Japan; British seamen reorganized the navy; French officers remodeled the army. Western laws were introduced, a new nobility was created on a Western basis and in 1889 a constitution was proclaimed. During the last quarter of a century the Japanese court has emerged from the seclusion in which it had maintained itself through the centuries.

In 1894, through trouble in Korea, Japan became involved in a war with China. The Japanese had a decided advantage in equipment and numbers, and the war had not been long in progress before it became clear that defeat for China was certain. The Chinese navy was almost completely destroyed, and in February, 1895, China was compelled to ask for peace. Japan took an active part in the rescue of the foreign legations in Peking during the Boxer uprising, and greatly added to its prestige by defeating Russia in the war of 1904-1905. In 1910 Korea was formally annexed as a Japanese Province, and its name was changed to Chosen.

In 1914 Japan joined the Allies in the war against Germany. Its chief service was in the transporting of troops and in keeping the Pacific waters clear of German submarines. As compensation, Japan was given the mandate to the former German islands of the Pacific, north of the equator.

The Japanese Emperor, Yoshihito, who had reigned from 1912 to 1926, died in the latter year and was succeeded by his son, Hirohito, whose coronation was celebrated with great splendor in 1928. Hirohito, born in 1901, is the first Japanese Emperor with a Western education.

Japan's ambition to have room for expansion and colonization on the Asiatic mainland was partly frustrated by its defeat by Russia in 1904-05. But Japan maintained its treaty rights to an extensive railway system in Manchuria, and in the claim that these rights were not being protected by China, it sent an armed force to Manchuria in 1931-32, captured Mukden and by a series of successful movements obtained control of all of Manchuria and the Chinese province of Jehol. Under Japan's auspices the state of Manchukuo was established, perhaps destined in time to become definitely a part of the Japanese Empire. In 1933, after controversy over its Asiatic policy, Japan resigned from the League of Nations, effective in two years.

Related Articles. Consult the following titles for additional information:

CITIES		
Hiroshima	Nagasaki	Tokyo
Kobe	Nagoya	Yokohama
Kyoto	Osaka	
HISTORY		
Boxer Rebellion	Mutsuhito	
China (history)	Russo-Japanese War	
Chinese-Japanese War	Shogun	
Chosen	World War	
Mikado	Yoshihito	
MISCELLANEOUS		
Aino	Japanning	Kuro Siwo
Formosa	Jinrikisha	Manchukuo
Fujiyama	Jujutsu	Sakhalin
Hara-kiri	Kurile Islands	Samurai

JAPAN CURRENT. See KURO SIWO.

JAPANNING, the art of applying varnish to wood, metal, leather and other materials in imitation of the lacquered work of Japan and China. The article to be japanned is made thoroughly dry and brushed over with two or three coats of seed-lac varnish, to form the priming. The next coat of varnish is mixed with the color desired; or, if a design is to be used, it is at this stage painted on the primed surface. The whole is then covered with additional coats of varnish, which are dried and pol-

ished as applied. Iron articles when japanned are baked in an oven to give the desired finish.

JAPHETH, *ja'feth*, a son of Noah (*Gen. IX, 18*), born when Noah was about 500 years old. His descendants, according to *Genesis X, 5*, peopled the isles of the Gentiles, and thus Japheth is often considered the ancestor of most European nations.

JAPURA, *shah poo'rah*, or **YAPURA** (sometimes called CAQUETÁ in its upper course), a large river of South America, a branch of the Amazon. It rises in the Andes of Colombia, and flows in a general east-southeast direction and forms for some distance the (disputed) boundary between Ecuador and Colombia. It passes through forests of Ecuador and Brazil for many miles and enters the Amazon opposite the town of Teffe. Its length is about 1,800 miles, and it is navigable to Cupaty Falls, a distance of 620 miles. Above the falls it is navigable for 200 miles.

JARDINE, WILLIAM M. (1879-), educator and publicist. He was born in Idaho; at 20 years of age, he entered the Utah State Agricultural College, and on graduation in 1904, began his teaching career. From 1907 to 1910 he was in charge of dry land grain investigations for the U. S. Department of Agriculture. He helped to develop methods of cultivation adapted to areas of low rainfall. He then became, successively, agronomist, director of the experiment station, and dean in the Kansas State Agricultural College, and in 1917 President of the institution. In 1925 Mr. Jardine was appointed Secretary of Agriculture in the Cabinet of President Coolidge, and served the full term. In 1929 he was appointed United States Minister to Egypt.

JASMINE, *jas'min*, or **JESSAMINE**, the name of a genus of plants native to warm parts of Asia. The common jasmine has become naturalized in sub-tropical latitudes throughout the world. In cool climates it is cultivated as a garden shrub. It grows from six to ten feet high, has fragrant white blossoms and resembles the evergreens. The flowers are used in making oil of jasmine, a delicate perfume. *Cape jasmine* is the name commonly applied to the gardenia, not a true jasmine, but a subtropical plant belonging to the madder family. The flowers are large, white and fragrant, and the leaves are very beautiful. This species is a hot-

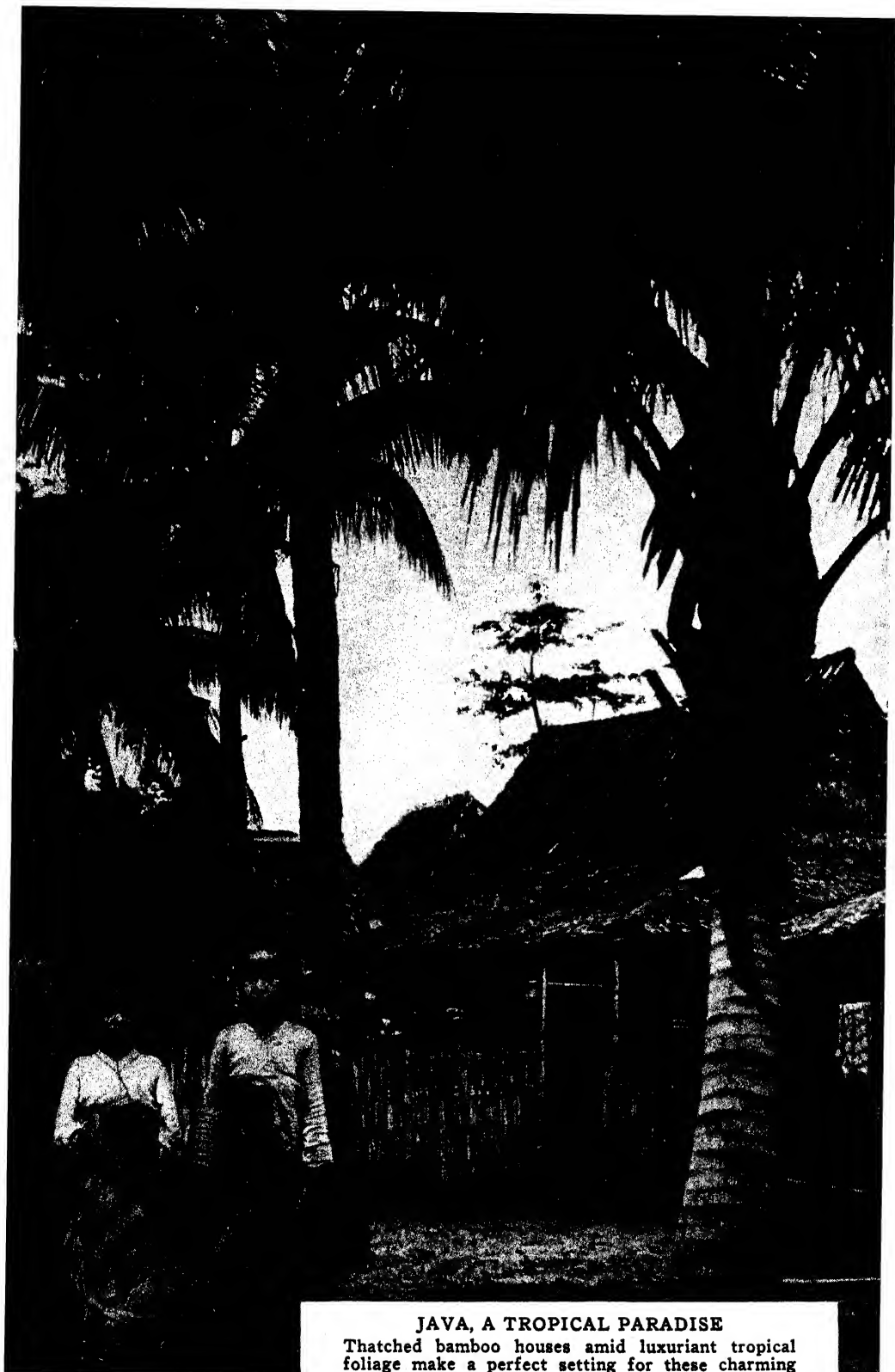


JAVA, THE BEAUTIFUL

This densely populated, fertile island, with its intricately carved Buddhist temples and shrines; quaint city of Batavia; wandering minstrels and busy market scenes, is a restful haven to the world-weary traveler.

1-3 Kaufmann-Fabry; 2-4 Ewing Galloway





JAVA, A TROPICAL PARADISE

Thatched bamboo houses amid luxuriant tropical foliage make a perfect setting for these charming

house plant in England and the United States, except in the South, where it grows in the open. The *Carolina jasmine* is a beautiful climbing vine which is common in South Carolina and some of the other Southern states. The flowers are a deep, bright yellow, with a fragrance similar to that of the true jasmine. Still another species is the *Spanish jasmine*, having very fragrant flowers which yield an essential oil.

JASON, in Greek legend, king of Iolcos in Thessaly, the leader of the Argonautic expedition. On his return from this quest he brought with him, as his wife, Medea, and she helped him to renew the youth of his father and to put to death his uncle Pelias, who had usurped the throne. After the death of Pelias, however, Jason was unable to keep possession of his throne and fled to Corinth, where some time later he deserted Medea and married Glauce, daughter of the king of that country. See ARGONAUTS; MEDEA.

JASPER, an impure, opaque, colored quartz, less hard than flint or even than common quartz, but giving a spark when struck with steel. It is opaque, sometimes feebly translucent at the edges, and presents almost every variety of color. It is found in metaphoric rocks and often occurs in very large masses. Jasper admits of a high polish and is used for table tops, seals and other ornaments. There are several varieties, red, brown, blackish, bluish and Egyptian. Agate jasper is a stone in which jasper and chalcedony occur in alternating layers (see AGATE). *Porcelain jasper* is only baked clay. The massive varieties of jasper constitute excellent building stone.

JASPER, WILLIAM (about 1750-1779), an American soldier, who was famous in Revolutionary history, was born in South Carolina. He distinguished himself at the siege of Fort Moultrie by leaping over the parapet and rescuing the colors which had been shot away. The commission as lieutenant which was offered him as a reward for this act, he refused to accept on account of his lack of education. In many later engagements he showed great bravery, and it was while trying to fasten the colors to a parapet during the attack on Savannah that he was killed.

JASSY, (or Yassy), *yah'se*, RUMANIA, an important city in the northern part of the Rumanian kingdom. It is situated on the Bachlui River, not far from the Russian

boundary. Jassy is a place of interesting historic associations. Here, in 1821, Alexander Ypsilanti began the movement to bring about Grecian independence, and previous to 1861, when Moldavia and Wallachia were united to form Rumania, it was the capital of Moldavia. In 1916, when Rumania was overrun by the Austro-German forces, the government was removed from Bucharest to Jassy, and the town continued to be national headquarters until late in 1918. Jassy is not a manufacturing center of importance, but in normal years it carries on an active trade in agricultural products, salt and petroleum. There are numerous educational institutions, including a university, founded in 1860, with a student enrollment of about 5,500. Population, 1930, 102,595.

JAUNDICE, *jahn'dis*, or *jawn'dis*, or **ICTERUS**, *ik'ter us*, a disorder which manifests itself in a yellowish color of the skin and the whites of the eyes. The victim of jaundice also suffers from weakness, failing appetite, constipation and stimulation of the kidneys. Nausea and vomiting are occasional symptoms. Jaundice is not itself a disease, but an indication of a disease of the liver, which prevents that organ from separating the coloring matter of the bile from the blood. The yellow color first appears in the whites of the eyes and then in the whiter parts of the skin. Careful attention to the diet and correction of constipation conditions are the usual measures used to cure an attack of jaundice. The patient should be under the doctor's care.

JAVA, *jah'vah*, the most important island of the Netherlands Indies. It is the most fertile island of its size in the world, is noted also for its beautiful scenery, and is a conspicuous example of competent colonial administration. It lies northwest of Australia and south of Borneo; Sumatra is northwest of it. For governmental purposes the island of Madura and other smaller islands are joined to Java, under the name "Java and Madura." Java is 666 miles in greatest length and from fifty to 121 miles in width, and its area is 48,503 square miles—almost exactly that of Louisiana. Java and Madura, combined have 50,057 square miles.

Products. The country is very mountainous, and contains forty-five volcanic peaks from 2,000 to 12,000 feet high. There are great plains, valleys and forests, all highly productive. Nearly all the natives are en-

gaged in agriculture; rice is the principal crop, and it is therefore the main food reliance of the people. Great quantities of coffee of the quality known throughout the world as "Java" are produced, also sugar, tea, pepper and indigo. On higher lands, yet in the warm zone, bananas, oranges, lemons and cocoanuts are a source of revenue. The forests are rich in teak, (which see).

The People. The native inhabitants are of the Malay race, but are in numerous distinct groups, of which the Javanese, the Sundanese, the Baduwis and the Tenggerese are prominent. Java and Madura together had 41,718,335 people in 1930. Of these, 192,000 were Europeans, about one-half of them Dutch; after them, in order of numbers, were Germans, Belgians, English, French and Swiss. There were 563,000 Chinese and 29,000 Arabs. The Europeans live under the laws of the mother country, the Netherlands, but the laws applied to the natives are framed in consideration of their customs and institutions. The chief executive is a Governor-General, appointed from The Hague.

The capital of Java and Madura is Batavia, which in 1930 had a population of 437,433. Other cities of importance are Soerabaya (156,752) and Soerakarta (118,378). There is freedom of worship throughout the island.

History. The history of Java is unknown up to the eleventh century, when it became the site of powerful Hindu realms. The Hindus founded a dynasty and converted the natives to Brahmanism. This was overthrown by the invasion of the Mohammedans in 1478. In the early sixteenth century the Portuguese made their way to the island and were succeeded by the Dutch in 1595, who wrested from them the supremacy. At this time the two chief states were Mataram and Bantam. After the Dutch conquest was completed Mataram was divided into the sultanates of Soerakarta and Jokyokarta, which exist at present. Bantam disappeared a century ago. From 1811 to 1815 Batavia was in the hands of the English. Since then the Dutch have held the supremacy.

JAY, a bird related to the crow, but of smaller size. It has a trim shape and beautiful plumage, blue usually predominating. Some species have long tails and high crests. The jays have harsh voices and do not sing, but some of them are skilful in imitating the calls of other birds. They are noted for their

fighting disposition and for the bad habit of destroying the nests, eggs and even the young of weaker birds.

Some of the jays are brilliantly colored. The beautiful American *blue jay* is bright



BLUE JAY

blue marked with black and white. The *Canada jay*, or *whisky Jack*, or *lumber Jack*, is a bird of rather somber coloring, but with the bold, noisy and active habits of the other jays. The common European jay is cinnamon-colored, varied with white, black and blue. Its head is provided with a conspicuous black-marked crest.

JAY, JOHN (1745-1829), an American jurist and statesman, remembered especially for his work in behalf of the Federal Constitution and for his connection with the treaty that bears his name (see JAY TREATY). He was born in New York City and educated at King's College (now Columbia University). After his graduation, in 1764, he studied law and was admitted to the bar in 1768. Jay entered public service in 1773 as secretary of a royal commission for settling the boundary between New Jersey and New York. He was a delegate to the First and Second Continental Congresses, and in 1776 was elected to the New York provincial congress. In 1778 he returned to Congress, becoming its president, and in 1779 went to Madrid as minister to Spain. In 1782 Jay was summoned to Paris to assist Franklin and, later, John Adams in the negotiation of the peace treaty with Great Britain, which was signed in 1783.

Returning afterwards to the United States, Jay served as Secretary of Foreign Affairs until the government was organized under the Constitution, and later was made Chief Justice of the Supreme Court. In 1794 he was sent as envoy extraordinary to Great Britain, where he signed the famous treaty referred to above. In 1795 he resigned his position as Chief Justice to become governor of New York, and after serving two terms retired to private life. See *FEDERALIST, THE*.

JAY TREATY, the name given to a treaty between Great Britain and the United States, negotiated and signed for the United States by John Jay, in 1794. It provided for the evacuation of the forts in the Northwest by the British, for a commission to determine the northeast boundary between Canada and the United States and for compensation to the United States for illegal captures of American merchantmen after the Revolutionary War. The United States also agreed to pay debts due British merchants at the beginning of the Revolution.

The treaty was exceedingly unpopular in America, since it contained no reference to the impressment of seamen or to the kidnapping of negroes by the British army, and because it placed restrictions on United States trade with the West Indies. Charges of bribery and corruption were leveled at Jay and even at President Washington; the ratification of the treaty was made a party issue, but was finally accomplished after a hard struggle. While the treaty was not favorable to the young nation, the country was in no condition to engage in a new war. Historians agree that Washington and Jay did all possible to secure what they could and at the same time avert hostilities.

JEFFERSON, JOSEPH (1829-1905), an American actor, born in Philadelphia. His great-grandfather was a member of Garrick's company at Drury Lane, while his father and grandfather were well-known American actors. Jefferson was on the stage from his very infancy, appearing as a child in *Pizarro* when only three years of age, and dancing as a miniature "Jim Crow" when only four. For many years he went through the hard training of a strolling actor and then played in New York, where in 1857 he made a hit as Doctor Pangloss, in the *Heir-at-Law*, and in 1858 created the part of Asa Trenchard in *Our American Cousin*, the elder Sothorn playing Lord Dundreary. Some time later

he assumed for the first time the rôle of Caleb Plummer in *The Cricket on the Hearth*.

In 1865 he visited London and at the Adelphi Theater played for the first time his world-famous part of Rip Van Winkle in the play arranged by Boucicault from Irving's story. The character was a perfect work of art—beautiful in conception, subtle and delicate in execution.

After a long run with Rip Van Winkle, Jefferson returned to his earlier parts, and in 1868 he made for himself another famous rôle, as Bob Acres in *The Rivals*. From 1880 until his death Jefferson did not attempt new rôles, but played Rip, Caleb Plummer and Bob Acres, retaining all his early popularity. He had considerable talent as a painter, and many of his pictures, produced for recreation and amusement, have been given high praise by critics. Aside from his remarkable ability as an actor, Jefferson was of high character and charming personality.



JOSEPH JEFFERSON



JEFFERSON, THOMAS (1743-1826), an American statesman and diplomat, author of the Declaration of Independence and third President of the United States. Among the fathers of the American republic, two stand out as eloquent representatives of opposing schools of thought. They were Thomas Jefferson and Alexander Hamilton. The political theories of the former are summarized in those deathless phrases embodied in the Declaration that he fathered: "All men are created equal; governments derive their just powers from the consent of the governed." It is recorded of Hamilton, on the other hand, that he characterized the people as "a great beast," and that he believed that only the well-born and the able should participate in the government.

The American Constitution and forms of government represent a blending of the theories of these two men, equally patriotic and equally devoted to their country's welfare. That a strong central government was established, endowed with sufficient powers to maintain itself, we owe to Hamilton, but the spirit of democracy, the vital spark that makes any government endure, is the gift of Thomas Jefferson. History shows nothing more plainly than that an autocratic government is the most unstable of all forms in a time of overwhelming crisis. It was the mission of Jefferson to proclaim that the basis of a successful government is justice to all and recognition of the right of the people to govern themselves.

Ancestry and Education. Thomas Jefferson was born at Shadwell, Va., on April 2, 1743 (April 13 N. S.) His father, Peter Jefferson, was owner of a large estate and a man of some distinction in the community. He was, however, thoroughly democratic in his views and manner of living, qualities he seems to have imparted to his eldest son, Thomas. The mother of the future President was one of the Virginia Randolphs. The boy was educated in the common schools and under private instructors, later studied at William and Mary College, and after his graduation studied law, being admitted to the bar in 1767.

Early Public Career. Jefferson was elected to the lower house of the Virginia legislature in 1769 and took a prominent part in the advocacy of radical measures of resistance to Great Britain. In March, 1773, Jefferson, with Patrick Henry and other kindred spirits, formed a committee of correspondence, an action which led to a second dissolution of the legislature. He took a prominent part in the agitation in favor of the Continental Congress, and a tract which he had drawn up as instructions to Virginia's delegates was later published as *A Summary View of the Rights of British America*, which had a wide circulation and exerted a powerful influence. Jefferson's radical stand for colonial rights made him a marked figure in the colonies, and in 1775 he was appointed a delegate to the Continental Congress, becoming, on June 10, 1776, chairman of that famous committee which was authorized to draft a declaration of independence. The memorable document, which was largely the work of Jefferson, was debated in Congress from July 1 to July 3,

and was finally adopted on July 4, which day became the birthday of a new nation.

Statesman and Diplomat. Jefferson retired from Congress in the fall of the same year to devote himself to political work in his own state. There he had an important influence in incorporating democratic ideals in the new constitution and laws. He served in the legislature and as governor, and at the close of the Revolutionary War he was chosen one of America's commissioners of peace, but did not sail, the work having been practically accomplished before he was ready to leave. Jefferson reentered Congress in 1783, and during the session served on several committees appointed to draw up important papers. Among the reports he drafted was one proposing the adoption of the dollar and its division into tenths and hundredths. Another of his reports formed the basis of the ordinance later adopted for the government of the Northwest Territory (see ORDINANCE OF 1787). In May, 1784, he went abroad to assist Franklin and Adams in the negotiation of commercial treaties intended to supplement the Treaty of Paris, ending the Revolutionary War. Jefferson remained in Europe as minister to France, and was absent from home five years; though not negotiating many important treaties, he did much to raise the prestige of the American government and to popularize the American cause.

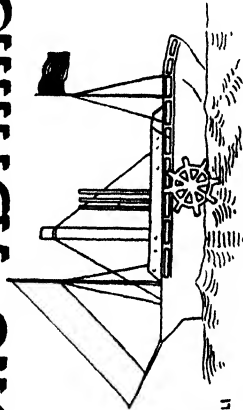
In 1789 he returned to America and reluctantly accepted the office of Secretary of State in Washington's first administration. Here he first came into conflict with his great rival, Alexander Hamilton. Their opposition became particularly acute during the trouble between France and England in 1793, when Jefferson's followers desired not only recognition for Genet but wished the United States to take actively the side of France. He retired from office in the same year, and at the close of Washington's second term he became the candidate of the Anti-Federalists for President. As he was defeated by Adams, Jefferson became Vice-President. In this position he also came into conflict with his superior officers, and at the passage of the Alien and Sedition Laws he wrote a series of resolutions for the Kentucky legislature, protesting against the laws as unconstitutional.

Administrations. The campaign of 1800 was extremely bitter, and Jefferson and Burr, the two candidates of the Democratic-Republicans, received the same number of votes,

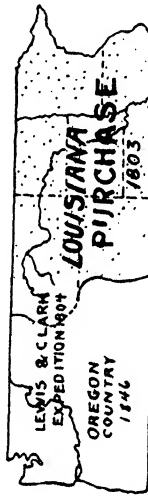
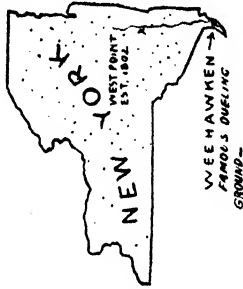
1801 JEFFERSON'S ADMINISTRATION 1809

TRIPOLITAN WAR

TIME-1801-5
1801-TRIPOLI DECLARED WAR
1803-NAVAL FORCE IN MED. SEA
PHILADELPHIA FOUNDERS
CREW TREATED AS SLAVES
1804-DECATUR'S EXPEDITION
PEOPLE ARMED TRIPOLI
1805-TROUBLE CEASED
BASHAW AGED TO MAKE TREATY



FULTON'S CLERMONT 1807



PURCHASE OF LOUISIANA
FROM- NAPOLEON
BY THOMP- LIVINGSTON & MONROE
CAUSE- TERRITORY OF NAPOLEON
1- TO PREVENT ENGLAND GETTING IT
2- TO MAKE THE UNITED STATES
A RIVAL OF ENGLAND
OBJECT-
1- TO OPEN THE MISSISSIPPI TO
2- TO OPEN THE GULF OF MEXICO
3- TO ENTER THE U.S. TERRITORY
TERMS- ABOUT 15,000,000 DOLLARS
INCIDENTS-
1- TERRITORY OF US MORE THAN DOUBLED
2- THE "GIMMIE" SLAVE TERRITORY AND
GAVE RISE TO THE MISSOURI COMPROMISE

FOREIGN AFFAIRS
1806 ENGLAND ORDERS IN COUNCIL
NAPOLEON- MILAN DECREE
FINANCE ACT
CHESAPEAKE FIRED ON
1809- MHI- INTERCOURSE LAW PASSED

DOMESTIC AFFAIRS
1801- FIRST WRITTEN
MESSAGE TO CONGRESS
ARMY & NAVY REDUCED
1808- IMPORTATION OF
SLAVES PROHIBITED

Administrations of Thomas Jefferson, 1801-1809

I. THE PRESIDENT

- (1) Birth
- (2) Ancestry
- (3) Education
- (4) Early career
- (5) Career after formation of the Union
- (6) Character
- (7) Death

II. GOVERNMENTAL AFFAIRS

- (1) Domestic
 - (a) First written President's message to Congress
 - (b) Ohio admitted to the Union
 - (c) United States Military Academy established
 - (d) Louisiana Purchase
 - (e) Twelfth Amendment adopted, 1804
 - (1) To avoid contested elections
 - (2) Separate ballots for President and Vice-President
 - (f) Lewis and Clark Expedition
 - (g) Slave trade prohibited
- (2) Foreign
 - (a) Trouble with England
 - (1) Causes
 - (a) England's claim to the allegiance of naturalized Americans
 - (b) Claim the right to search neutral vessels
 - (c) Impressment of seamen
 - (2) Results
 - (a) Embargo Act
 - (b) Non-Intercourse Act
 - (c) British Orders in Council
 - (d) Napoleon's decrees
 - (b) War with Tripoli

III. INTERNAL AFFAIRS

- (1) Invention of steamboat
- (2) Duel between Hamilton and

Burr

- (3) Cumberland Road begun
- (4) Burr's Conspiracy

IV. ELECTION OF 1808

- (1) Issues
- (2) Parties
- (3) Candidates
- (4) Election of Madison

Questions on Jefferson

- When was Jefferson born?
- What services did he render before the adoption of the Constitution?
- What was his interpretation of the Constitution?
- Who was the great advocate of the opposite interpretation?
- By what name was the party of Jefferson known?
- When was the first written President's message sent to Congress?
- What state was admitted to the Union during Jefferson's administration? When?
- When was the Military Academy at West Point established?
- From whom was Louisiana purchased?
- What was the price?
- Why was it purchased?
- What was the purpose of the Twelfth Amendment?
- When did Lewis and Clark make their famous expedition?
- What was the Embargo Act? What were its effects?
- What were the purposes of the Non-Intercourse Act?
- Was the Non-Intercourse Act effective?
- Who was the author of the Berlin and Milan decrees? What great system were they to enforce? Explain briefly what this system was.
- What were the causes of the war with Tripoli?
- Who was Stephen Decatur? What part did he take in the war with Tripoli?
- Give a short account of the career of Commodore Preble.
- What was the name of the first steamboat? Who was its inventor? When and where did it make its final trip?

Jefferson finally being chosen President by the House of Representatives. As a result of the bitterness which developed in this election the Constitution was amended in 1804, and the practice of having a nominee or Vice-President was adopted.

Immediately after his inauguration, in 1801, Jefferson proceeded to carry out his democratic theories. He reduced the navy, had appropriations for the army and diplomatic service cut down, and endeavored in other ways to secure simplicity and economy. During this administration, however, the young nation showed its mettle by compelling the Tripolitan government to abandon its piracy on American vessels in the Mediterranean Sea. It is an interesting fact that the most splendid achievement of Jefferson's career as President—the Louisiana Purchase—was a departure from his expressed theories on strict construction of the Constitution. When he saw, however, that the people overwhelmingly approved of the purchase, he had the good judgment to accede to popular feeling in the matter.

In 1804 Jefferson was reelected by a large majority. Unfortunately for the progress of the nation, France and England were at War throughout Jefferson's second term, and in their efforts to destroy one another's commerce they greatly encroached on the rights of the neutrals. An added irritation was England's policy of searching American vessels for contraband and for British seamen. In retaliation Congress passed the Embargo Act, forbidding French or English vessels to enter American ports, but this measure harmed the United States more than the belligerents, and it was superseded by the Non-Intercourse Act in 1809. Other events of this administration include the establishment of the military Academy at West Point, the beginning of work on the Cumberland Road, the abolition of the right to import slaves from Africa, the Lewis and Clark Expedition and the conspiracy of Aaron Burr.

At Monticello. In 1809 Jefferson retired to his home in Albemarle County, which he named Monticello. Though he never again undertook a public office, the "sage of Monticello," as he was called, was visited by people from all parts of the country and from Europe, and his advice was eagerly sought by two Presidents who followed him, Madison and Monroe. Towards the close of his life he founded the University of Virginia, and the

place which this institution had in his heart is indicated by his request that the words "Father of the University of Virginia" be included in his epitaph. On July 4, 1826, just half a century after the adoption of the Declaration of Independence and the same day on which John Adams died, he passed away.

As some one has said, he was a friend of the common people, "who not only served them, as many have done, but who honored and respected them, as few have done." In impressing this democratic ideal upon the American government and society, Thomas Jefferson performed his most notable service.

Related Articles. Consult the following titles for additional information:

Alien and Sedition Laws	Hamilton, Alexander
Declaration of Independence	Kentucky and Virginia Resolutions
Embargo	Lewis and Clark Expedition
Genet, Edmund	Louisiana Purchase
Charles	

JEFFERSON CITY, Mo., the capital of the state and the county seat of Cole County, 125 miles west of Saint Louis, on the Missouri River, and on the Missouri Pacific, and the Missouri, Kansas & Texas railroads. There is an airport. The city is 600 feet above sea level, near the geographical center of the state. It is the seat of Lincoln University, a normal school for negroes, and has a Carnegie Library, state and supreme court libraries, open to the public, and a hospital. Among the other prominent buildings are the state capitol, the penitentiary, the armory, the governor's mansion, the supreme court building and the United States Federal building. The city is an important trade center for a rich agricultural and mining region. There are railroad shops of the Missouri Pacific and extensive manufactories of agricultural implements, shoes, clothing, flour, foundry products, brick and other articles. The place was settled in 1826 and was incorporated in 1839. Population, 1920, 14,490; in 1930, 21,596.

JEHOL, re ho', (or Chengteh), a town in the southwestern part of Manchukuo, 140 miles northeast of Peiping, China. It is the site of a Chinese imperial palace built in 1703, to which the Chinese court took refuge in 1912, upon the overthrow of the Chinese Imperial government, and of numerous Lama monasteries and temples. Jehol and the district of the same name was occupied by the Japanese in 1933. The population of the town is about 20,000.

JEHOSHAPHAT, *je hosh'a fat*, son of Asa and fourth king of Judah after the revolt of the ten tribes. He reigned about 896-871 B. C. He was noted for his admirable internal management of the kingdom. He established local judges in every walled city, and two courts of appeal, ecclesiastical and civil. See *II Chronicles*, XVII-XX.

JEHO'VAH, the name used by pious Hebrews of Old Testament times to designate God. The Hebrews cherished the most profound awe for this name, which led them to avoid pronouncing it and to substitute the word *Adonai*, signifying *the lord*. This custom still prevails among the Jews. In some portions of the Pentateuch Jehovah is the name regularly applied to God, in others Elohim, which has led to a theory of two authors respectively for these portions.

JEHU, a Bible character represented first as a general of Ahab and Jehoram, and later as king of Israel. The illness of Jehoram gave him opportunity to seize the throne and put the king to death (842 B. C.). Jehu then proceeded to kill Ahaziah, king of Judah, and his forty-two kinsmen, Ahab's seventy children and his wife, Jezebel. After the extermination of the royal houses of Judah and Israel, Jehu reigned twenty-two years. Jehu is represented (*II Kings*, IX-X) as an instrument of God in bringing about just punishment, at Elijah's instigation, for the murder of Naboth (*I Kings*, XXI) and in suppressing Baal worship.

JELlicoe, *jel'i ko*, JOHN RUSHWORTH, Earl, (1859-1935), a British naval officer who was in command of the Grand Fleet of Great Britain from 1914 to 1916. He entered the navy at the age of thirteen, rose rapidly in position and honor, after serving in China from 1898 to 1901 was chief of staff to Vice-Admiral Seymour during the Boxer Rebellion. Jellicoe was made rear-admiral in 1907, was appointed commander of the Grand Fleet in 1914, and in 1915 received the rank of admiral. In 1916 he commanded the fleet in the Battle of Jutland, but later in the year was succeeded as commander by Sir David Beatty (which see). Admiral Jellicoe then became First Lord of the Admiralty, and held this position until 1917, when he relinquished it to Sir Eric Geddes. In 1919 he published *The Grand Fleet, 1914-1916*. Jellicoe was created a viscount in 1918, was made an earl in 1925, and was awarded America's Distinguished Service Medal.

JELLY, the name applied to animal or vegetable substances which liquefy when heated, but become a tremulous, partly-solid mass when cold. Fruit jellies, which are a nutritious and widely used class of foods, are made by pressing out the juice of fruits and boiling the liquid with a certain proportion of sugar. Animal jelly is prepared from the soft parts of animals, and even from bones when sufficiently crushed. It is a colorless, elastic, transparent substance, which dissolves quickly in hot water and is tasteless and odorless. See **GELATIN**.

JELLY-FISH, the popular name of several different animals found in the sea and so called because of the transparent, jelly-like substance constituting most of the body. They are often called *sea blubbers* or *sea nettles*, from their shape or their long stringing tentacles, with which they seize their prey. In the water they move rapidly and present a singularly-beautiful appearance. One of the most common forms is a bell-like body which swims gracefully through the water by alternately expanding and contracting. The animals are sometimes cast up on sea beaches, but out of the water they lose their beauty and have the appearance of formless masses of jelly.

JENA, BATTLE OF, a battle fought at Jena, October 14, 1806, between the Prussians under Prince Hohenlohe and the French under Napoleon. The French, who considerably outnumbered the Prussians, were completely victorious. The town Jena is situated in Thuringia, ten miles southeast of Weimar. It is the seat of a celebrated university and of the famous Zeiss optical works. Population, 1933, 58,357.

JENGHIS KAHN, *jen'giz kahn*. See **GENGHIS KAHN**.

JENNER, EDWARD (1749-1823), an English physician, celebrated for having discovered in vaccination a preventive of smallpox. He studied at London and settled in Gloucestershire as a medical practitioner. About 1776 the belief common among the peasants that casual cowpox acquired in milking cows was a preventive of smallpox caused him to direct his inquiries to the subject and, at the expense of his medical practice, he began to devote much time to investigation. In 1796 gave his first public demonstration. After years of sacrifice he was financially rehabilitated by the British government and received from the world at large

the honor and recompense due a great man who contributed immeasurably to the world's progress. See **VACCINATION**.

JEPHTHAH, *jef'thah*, one of the Hebrew judges, whose story is told in the eleventh and twelfth chapters of the book of *Judges*. Jephthah led the Gileadites to battle against the Ammonites, and defeated them. He had rashly made a vow that if he were victorious he would sacrifice to God as a burnt-offering whatever should first come to meet him from his house. Being met on his return by his daughter, his only child, he sacrificed her to the Lord, in accordance with his vow.

JERBO'A, a genus of small rodents having extremely long hind legs, which give them extraordinary power in leaping; their movement seems more like flying than running.



EGYPTIAN JERBOA

The fore legs are armed with short, powerful claws, with which the animal excavates its burrows and extracts the roots on which it chiefly lives. Jerboas live in communities; they are abroad principally at night, and they hibernate during the colder seasons, though they do not store food for the winter. They are found chiefly in Asia and Northern Africa; the typical species is the Egyptian form. The jerboa is closely allied to the American jumping mouse, or deer mouse. See **JUMPING MOUSE**.

JEREMI'AH, the second of the great prophets of the Old Testament. He flourished during the darkest period of the kingdom of Judah, under Josiah, Jehoahaz, Jehoiakim, Jecomiah, or Jehoiachin, and Zedekiah. He was called to the prophetic office about 629 B. C., in the reign of Josiah, and he lived to see the capture of Jerusalem by Nebuchadnezzar in 586 B. C. Nebuchadnezzar offered him a home at Babylon, but he preferred to stay among the wretched remnant of the people left in Judah. He is said to have been

stoned to death in Egypt by some of his countrymen who were irritated by his rebukes. Jeremiah wrote the books *Jeremiah* and *Lamentations*, and probably some of the *Psalms*.

JEREMIAH, LAMENTATIONS OF. See LAMENTATIONS.

JERICHO, *jer'i ko*, PALESTINE, a town of ancient Judea, on a plain about eighteen miles northeast of Jerusalem. It was noted, especially in Solomon's time, for its balsam gardens and its thickets of palm trees and roses. Jericho was the key to the possession of all Palestine, and was therefore invested by the Israelites who had passed the Jordan under Joshua to conquer this country. The account of the invasion and capture is told in the book of *Joshua* II, V-VII (see, also, *BIBLE*, subhead *Bible Stories*). Joshua pronounced a curse upon him who should rebuild the city, but it was rebuilt in the days of Ahab. It grew to considerable importance and is often spoken of in later history. Herod favored it and resided there, and Christ performed many miracles at Jericho. Vespasian destroyed the city, but it was again rebuilt. Its site is now occupied by the small village of Er-Riha.

JERICHO ROSE, or **RESURRECTION PLANT**, a small plant belonging to the mustard family, which came originally from Arabia. After the plant has finished blooming the leaves drop off and the branches dry



JERICHO ROSE

up and curve inward. In this state the plants are often broken off by the wind and blown about. If they happen to fall into

water the branches open out again, turn green, and the seeds fall out of the pods. The plants sometimes live for years. They are sold in many markets and are much enjoyed by children.

JEROBOAM, the name of two kings of Israel. **JEROBOAM I**, the son of Nebat, on Solomon's death, 931 B. C., was made king of the ten tribes who separated from Judah and Benjamin. He died in the twenty-second year of his reign (*II Kings* XI, XII, XIII). **JEROBOAM II**, the most prosperous of the kings of Israel, ascended the throne in 790 B. C. He repelled the Syrians, took their cities of Damascus and Hamath and reconquered Ammon and Moab. Licentiousness and idolatry were prevalent during his reign. Amos and Hosea prophesied during this time.

JEROME, **JEROME Klapka** (1859-1927), an English humorist, born at Walsale, Staffordshire. He was educated at Marylebone School and was successively clerk, tutor, actor and journalist. He gained a reputation as a humorist in 1889 with *Idle Thoughts of an Idle Fellow* and *Three Men in a Boat*. His plays include *Barbara*, *Sunset*, *Wood Barrow Farm* and *The Passing of the Third Floor Back*. His more recent books are *The Angel and the Author*, *They and I* and *Malvina of Brittany*.

JERSEY CITY, N. J., the county seat of Hudson County, the second largest city of New Jersey, and the twenty-third in size in the United States in 1930. It is situated in the northeastern part of the state, and is the terminus of nine railroads which approach New York from the south and west. From the heights back from the water front there is a fine view of the Hudson River, the great harbor and the New York City skyline. The city is connected with New York City by several ferries, four tunnels for rapid transit, and the Holland tunnel for vehicular transportation.

The adequate Jersey City airport is within the city limits. Five miles of the waterfront offer docking facilities for the largest ships. Among the important buildings and institutions are the county court house, city hall, public library, the Jersey City museum, the great city medical center—St. Francis and Christ hospitals, St. Peter's College and the John Marshall College of Law. Jersey City Heights, practically the southern ridge of the Palisades, contains many beautiful residences

and fine streets. A boulevard 100 feet wide and eighteen miles long traverses Hudson County from north to south and commands an extensive and impressive view.

The shipping and railroad facilities of Jersey City are excellent. There are inter-urban connections with all the large cities of the state, besides local lines throughout the tributary region, and among the industries are locomotive and railroad supply works, steel, foundry and machine shops, grain elevators, sugar refineries and manufactures of crucibles, glass, zinc, chemicals, jewelry, fireworks, lead pencils, chains, rubber goods and copper ware. Foreign and domestic commerce in iron, coal, produce and general merchandise is very extensive. There are large stockyards in the vicinity. The site of Jersey City was formerly called Paulus Hook, but in 1820 it was chartered as the City of Jersey and in 1838 as Jersey City. It is one of the largest cities in the United States that is governed on the commission plan. Population, 1920, 298,103; in 1930, 316,715, a gain of 6 per cent.



The Damascus Gate

JERUSALEM, a city of unique and profound historic and religious interest and devotion to millions of people of various faiths the world over. Jerusalem, the "Mother City" of devout Jews, sacred to Christians as the scene of the labors and death of our Lord, and beloved of Mohammedans, is one of the most ancient and interesting cities in the world. It is the capital of Palestine, in Asia Minor.

It stands on an elevated site about 2,500 feet above the sea, within the fork of two ravines, the valley of Jehoshaphat on the east, and the valley of Hinnom on the south and west. The Tyropoean, a third valley, traverses it from south to north. The city stands on four hills, once separated by deep valleys, which are now partially filled up by the debris of successive ruins. Zion, the most celebrated of these summits, on the southwest, rises to a height of 300 feet above the valley of Hinnom. Mount Moriah is on the east, and on the northeast is Mount Bezetha, a little higher than Moriah. Mount Akra is

on the northwest, and the Mount of Olives, to which Christ often repaired for prayer, is to the east of the city.

Jerusalem As It Is To-Day. Modern Jerusalem is surrounded by a high wall, pierced by eight gates, through which roads lead into the surrounding country. Jaffa, Bethlehem, Hebron and Jericho and the Dead Sea are all connected with the city by good roads, and a railroad is in operation between Jerusalem and Jaffa. The city wall as it stands at present was built by Solyman the Magnificent in the sixteenth century, and occupies practically the same place as the walls which were standing during the time of the Crusades. The most important gates are the Jaffa gate, at the west; the Damascus gate at the northwest, and another gate which has been opened to the north of the Jaffa gate. Outside the walls to the northwest is a suburb, the new part of the city. Here are numerous Christian churches, schools, hospitals, monasteries and modern private dwellings.

The town within the walls covers an area of 210 acres, thirty-five of which are occupied by the Temple enclosure, which is called Haram-esh-Sheif. The remaining space is divided into different quarters, the two Christian quarters, including an Armenian portion, taking up the western part, the Mohammedans having the northeast and the Jews the southeast. The walls are irregular, and the city is also laid out in the most irregular way, with narrow, tortuous streets. The chief features of interest in Jerusalem are still its historical places. The Temple, or Dome of the Rock, sometimes wrongly called the Mosque of Omar, stands upon the summit of Mount Moriah. This building has eight sides, each sixty-eight feet long, and four doorways, and the whole is covered with porcelain tiles of various colors. The dome is ninety-eight feet high and seventy-five feet in diameter, and is made of wood. The present shrine was built in 688 by Abd-el-Melek. The Church of the Holy Sepulcher is one of the most interesting buildings and is believed by many to cover the tomb of Christ. The first church on the site was built by Constantine in A. D. 326, and since that time many others have been built. The present building was completed in 1810. The Tower of David, the mosque known as the Tomb of David, and the Via Dolorosa, or "Ways of Sorrows," are other features.

Jerusalem is a busy mercantile place; it has modern hotels, various educational and religious institutions and numerous stores, all of which are in strong contrast to the Jerusalem of the past. The principal industries now are the production of ornaments, carved in mother-of-pearl, and the making of various articles from olive wood. These articles find ready sale among the 15,000 to 20,000 tourists and pilgrims who annually visit the city.

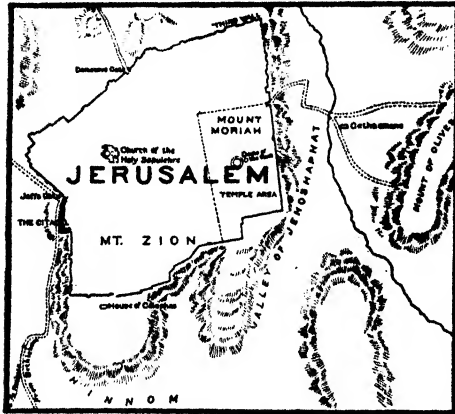
The climate is not unhealthful, but for many centuries the unsanitary condition of the city, its filthy streets and crowded population, resulted in a heavy death rate. After the British occupation in 1917 there were notable changes. Mosquito-breeding places were rendered harmless, and the old-fashioned cisterns, infested with germs, ceased to be used as sources of water supply. British engineers constructed a pipe line into Jerusalem from a group of springs in neighboring hills, and now the people are supplied with pure drinking water in abundance. Work has been completed on a Hebrew University; General Allenby, of the British army, witnessed the laying of the twelve foundation stones—one for each tribe of Israel. The city has a magnificent library.

History. The written history of the ancient city begins with inscriptions on clay tables, dating from the fifteenth century B. C. At that time Palestine was under Egyptian rule. About 1200 B. C., when the Hebrew conquest of Palestine began, Jerusalem and the surrounding country were in the hands of the Canaanites. A small clan called Jebusites controlled the city itself, and the lower part was taken from them by Joshua. The upper part continued in their possession till the time of David, who captured the citadel and took up his residence in the stronghold of Zion. He made the city the capital of his kingdom and called it "City of David."

It reached the height of its glory under Solomon, who erected the Temple on Mount Moriah. In 586 B. C. Nebuchadnezzar took and destroyed Jerusalem after a long siege and carried off as captives to Babylon those of the inhabitants whom the sword had spared. On their return from captivity the Temple was rebuilt, in 515 B. C., but the walls were not rebuilt until the time of Ezra and Nehemiah, 255 B. C.

In 332 B. C., the city passed into the hands of Alexander the Great. It regained a con-

siderable degree of prosperity by 168 B. C., but in that year it was sacked and its walls leveled by Antiochus of Syria. Under the Maccabees, Jerusalem, in common with Judea, once more became independent, in 165 B. C. It next became tributary to Rome, and was a part of the Roman Empire



throughout Christ's ministry. In A. D. 66 Jerusalem was taken by a party of Jews, who had revolted against Rome. Titus, the son of the Emperor Vespasian, regained it in the year A. D. 70, after a siege which was one of the most terrible in history. The Temple, built by Herod, was burned, and the city was utterly destroyed. In 131 Hadrian ordered the city to be rebuilt, but it continued depressed till the beginning of the fourth century.

Rome having become more Christian, Jerusalem then shared in the benefit and assumed the appearance of a distinguished Christian city under Constantine the Great. Constantine built the first Church of the Holy Sepulcher over the supposed site of Christ's burial, but this church was burned by the Persians in 613. This period of prosperity, prolonged by a succession of Christian emperors, was suddenly terminated in 636 by the conquest of the Mohammedans under the Arabian caliph, Omar. In 1099 the Crusaders took Jerusalem by storm and made it the capital of a Christian monarchy, which with difficulty maintained its existence till 1187, when it was finally overthrown by Saladin and the city again came into the power of the Mohammedans. In 1517 Jerusalem fell into the hands of the Ottoman Turks, and remained a part of the Turkish Empire for four centuries. With all of Palestine in

British possession at the close of the World War, the fate of Jerusalem was bound up with that of Palestine (which see), of which it is the capital city. Population, 1932, 90,502.

Related Articles. Consult the following titles for additional information:

Crusades	Maccabees
David	Palestine
Jesus Christ	World War
Jews	Zionist Movement

JESSAMINE, *jes' a min*. See JASMINE.

JESTER, or **COURT FOOL**, in former times a witty buffoon or professional fool at a king's court or in a nobleman's household, employed to make jests for the entertainment of the master and his friends. The professional jester usually wore a dress of motley colors and a gaily-colored cap, or cowl, furnished with bells and asses' ears, or crowned with a cock's comb.

JESUITS, *jez'u its*, or **SOCIETY OF JESUS**, the most celebrated of all the Roman Catholic religious Orders, was founded in the sixteenth century by Ignatius Loyola (see LOYOLA, IGNATIUS OF), and was established by a Papal bull in 1540. The first general of the Order was Loyola. The members, in addition to the usual vows of poverty, chastity and implicit obedience to their superiors, were bound by a fourth vow, to go whithersoever the Pope should send them, as missionaries for the conversion of infidels and heretics, or as other servants of the Church. Popes Paul III and Julius III, seeing what support they might have in the Jesuits against the Reformation, granted to them privileges such as no body of men, in Church or State, had ever before obtained. Their general was invested with unlimited power over the members, the dispersion of whom throughout society was made the basis of the Order. The constitution of the body was drawn up in great part by Loyola himself, but the second general, Laynez, had much to do with directing its early movements.

The Order, through its zealous activity and its success against the growing power of Protestantism, soon gained the approval of the Pope. The Jesuits carefully avoided all appearance of spiritual pride, often wore the ordinary garb of the country and generally dealt with all matters in a spirit and with a policy adapted to circumstances. In Europe they became the teachers of the higher classes and carried out on a large scale

improvements in the system of instruction. The young nobility were sent almost exclusively to them, even from Protestant countries, to be educated.

At an early date the Jesuits began to send missionaries to heathen nations. The greatest of these was Saint Francis Xavier (which see), a close friend of Loyola. He is often called the "Apostle of the Indies," because his first work was done in India. He was not only the means of converting thousands to Christianity, but had a supreme faculty for organizing his converts into communities under the constant care of competent native teachers.

The story of the work of the Jesuit missionaries in America is thrilling. Garnier, Daniel and others were shot, and De Brébeuf and Lallement were burned at the stake. Marquette discovered the Mississippi and explored it as far as the mouth of the Arkansas. Other Jesuits from Mexico reached the Pacific coast and established the missions of California. The records, or *Relations*, of the French missions have been published in seventy-two volumes replete with valuable historical matter. Members of the English and Spanish Orders also came to America at an early date, and many of their records have also been preserved.

Wherever the Jesuits went they were considered as the special upholders of the Papacy and the most faithful defenders of the Roman Catholic Church. This close adherence to the Pope often made their position insecure, even in Catholic countries. Finally, in 1764, the united efforts of their enemies in France brought about their suppression by royal edict throughout the French dominions. This example was followed within a few years by the other Bourbon courts—Spain, Naples, Parma and Modena. In 1773 Pope Clement XIV issued the brief *Dominus ac Redemptor Noster*, by which, without entering in any way into the justice of the charges made against the Jesuits, but acting solely on the motive of "the peace of the Church," he suppressed the society in all the states of Christendom. In all the Catholic countries, except Spain and Portugal, the Jesuits were, however, allowed to remain, and as individuals continue their ministerial or literary work. In 1814 the Order was reestablished in all Christendom.

Since then the Society of Jesus has flourished in all parts of the world. It is the

most zealous of all missionary bodies of the Roman Catholic Church and has over 3,000 priests in heathen lands. It is foremost, too, in the work of education. The preparation for this work, a comprehensive and thorough course consisting of seven years of study, embracing the humanities, philosophy and science, must be completed by each candidate for orders.

JESUS CHRIST, the founder of Christianity, was born in Bethlehem, Judea, according to the generally accepted chronology in the year of Rome 750, that is, 4 B. C. This apparent discrepancy in date is due to an error that was made when the Christian calendar originated with Dionysius, A. D. 556. He fixed upon the year of Rome 754 as that in which Christ was born. Later information proved beyond a doubt that this date should have been 750, which gives the birth of Christ four years before the beginning of the Christian Era according to the calendar of Dionysius. The mother of Jesus was Mary, who was probably a descendant of David, and her husband, Joseph, was also a descendant of the same family. The birth of the holy child occurred in a manger at a public inn in Bethlehem, where Joseph had gone to be registered in accordance with the Jewish law relating to taxation.

The miraculous conditions connected with His birth prove to the satisfaction of most followers of Christianity that Jesus was of divine origin. His parents remained at Bethlehem for some time. The infant Savior was circumcised on the eighth day, and at the end of the fortieth day He was presented in the Temple, and His mother, according to the Jewish law, made the customary offers for her purification. Soon after this He was visited by wise men, or Magi, from the East, who claimed to have been guided to the spot where He was by the miraculous appearance of a star. Inquiries of these men as to where the child who was to be king of the Jews was born, led Herod (at that time Roman ruler of Judea) to cause all the male children in Bethlehem under three years of age to be put to death. Joseph, however, was warned by an angel, and he fled with Mary and Jesus into Egypt, where he remained for a few months, until after Herod's death, when the holy family returned and took up their residence at Nazareth. Here Jesus lived and grew to maturity, and because of this He is frequently called the Nazarene.

Of the boyhood and youth of Jesus almost nothing is known. The only authentic account given is that of His appearance in the Temple when twelve years of age (*Luke II, 46-50*). The public ministry of Jesus was preceded by the preaching of John the Baptist, who proclaimed the coming of the kingdom of God and called men to repentance. Following His baptism by John, Jesus retired into the wilderness of Judea, where He was subjected to various temptations. After the temptation He was pointed out by John as the Son of God, and some of John's disciples from that time became His followers. His first public appearance was at the marriage in Cana of Galilee, where He wrought the miracle of turning water into wine. He then visited Capernaum, appeared in Jerusalem at the time of the Passover and revealed His majesty and power by cleansing the Temple of those who were changing money and selling animals for sacrifice. His works and teachings immediately aroused the opposition of the leaders of the Jews and, finding that this work in Judea was to be rejected, He departed into Galilee. During the remainder of the first year of His ministry He preached at Nazareth, where the people attempted to cast Him over a precipice because of His teachings; then at Capernaum, where He called the apostles Andrew, Peter, James and John. After the calling of His disciples He began His first circuit through Galilee. During this occurred the Sermon on the Mount and the Sermon in the Boat, which was followed by the miraculous draught of fishes. Near the close of this year He called Levi, or Saint Matthew, who became one of His most devoted followers.

The second year's ministry began with the attendance upon the Passover at Jerusalem and the healing of the lame man at the Pool of Bethesda. Following this were several other miracles, followed by discussions with the Pharisees and other leaders of the Jews, in which Jesus set forth the doctrine of the new dispensation and showed clearly the difference between the underlying principles of the Jewish law and the ceremonials largely practiced at that time. This increased the already growing opposition and was followed by the sending out of the twelve apostles to promulgate the doctrine of Christianity. After the visit to Jerusalem, Jesus began His second general circuit through Galilee. This circuit was characterized by the per-

forming of a number of miracles and the relating of some of the most important parables in the New Testament, among them those of the sower, of the tares, of the mustard seed, of the leaven and of the treasure. This was followed by the third general circuit, during which occurred the death of John the Baptist, the feeding of the five thousand and the walking on the water.

The third and last year of Jesus' ministry was by far the most important and included many discourses, miracles and parables. The great events of this year were the Transfiguration, His appearance at the Feast of Tabernacles, the raising of Lazarus, which so aroused the envy of the Jews that they resolved upon putting Him to death, and the events of the last week before the Crucifixion, generally known as Passion Week. As this week drew near, Jesus prepared to eat the last Passover with His disciples. On the first day of the week, which is still celebrated as Palm Sunday, He made his triumphal entrance into Jerusalem. During the next two days He spent his time in Jerusalem, cleansing the Temple and delivering discourses in which He used a number of parables to teach the truths which He wished to establish, after which He retired to Bethany. On Wednesday He gave a warning of the betrayal, and on the following day He ate the last Passover with His disciples. After the Passover meal, having been betrayed by Judas, He was arrested in the Garden of Gethsemane, brought before the high priest Caiaphas, condemned by the Jewish sanhedrin and early on Friday morning sent before Pilate, the Roman governor of Jerusalem, in order that the sentence of death might be legally confirmed. By Pilate He was released to the soldiers and was crucified on that day.

After His death the body was taken from the cross and buried by Joseph of Arimathea and Nicodemus. The tomb in which the body of Jesus was laid was one belonging to Joseph, and was in a garden near the place of crucifixion. On the morning of the first day of the week, or the third day after His death, Mary Magdalen and other women with spices hurried to the tomb in order to complete the work of embalming the body, but they found the stone rolled away from the door of the tomb and the place where Jesus had lain occupied by an angel, who gave them the message that Jesus had risen. See **RESURRECTION**; **SABBATH**.

After His resurrection Jesus remained on earth for forty days, during which time He appeared eleven times to His disciples and followers. At the last gathering on the Mount of Olives He ascended into heaven and was received by a cloud out of their sight.

Of the many works treating of the life and teachings of Jesus Christ, the following are authentic and are the most satisfactory to the general reader: For young readers, *The Children's Life of Jesus*; for adult readers, Cunningham Geikie's *Life and Words of Christ*; Edersheim's *Life and Times of Jesus the Messiah*; S. H. Andrews' *Life of Our Lord upon the Earth*.

JET, a variety of bituminous coal, which is very hard, takes a high polish, and is used for ornaments. It was called *Gagates* by the Romans, because it was first obtained near the mouth of the river Gagas in Syria.

JETSAM. See FLOTSAM, JETSAM AND LIGAN.

JETTY, an artificial embankment, extending into the sea or other large body of water, or used as a breakwater, or extending along the course of a river and parallel to its banks, for the purpose of deepening the channel. In the United States the term is usually applied to a construction of the latter character. Jetties are made of piles, mattresses of wood and stone and of stone alone. The most noted illustration of this use of jetties is at the mouth of the Mississippi River. This river empties into the Gulf of Mexico by several channels and deposits annually a large quantity of silt, which made the channel so shallow as to prevent ocean-going vessels of large size from ascending the river.

In 1874 Captain James B. Eads (which see) recommended the construction of jetties on the Southwest Pass as a means of deepening the channel, and the following year he was authorized to construct the jetties. The east jetty has a length of 11,800 feet, and the west, a length of 7,800 feet. The jetties are constructed of mattresses, made by binding together willows with planks and dowells. The willows were cut fifteen feet long, and each mattress consisted of four layers, each crossing the one beneath it. The mattresses were 100 feet long; for the bottom course they were fifty feet wide, but were narrower for each succeeding course until those of the upper course had a width of twenty feet. The mattresses were sunk by piling stones upon them. As they filled with silt they continued

to settle in the bed of the river until they were immovable. Within two years from the time of their completion a thirty-foot channel was secured, and it has been maintained ever since. See MISSISSIPPI RIVER.

In the Columbia River there are jetties more than four miles long.

JEWELRY, a collective name applied to personal ornament made of handsome colored stones and metals, usually of precious metals and precious stones. The love of jewelry is very old. Most of the large museums contain examples—some of it of great antiquity, made 5,000 years ago—taken from the royal tombs of Egypt, from among the remains of the ancient Assyrians, Mycenaeans, Greeks, Etruscans and Romans. The kinds of articles differ but little from those worn to-day—bracelets, rings, earrings, necklaces, pendants, and the like. Some of the pieces, notably those of the best Greek period (450 B. C.) and the Etruscan have never been surpassed for exquisite design and delicacy of workmanship. The designs cover a wide range, human and animal forms, floral and geometric patterns occurring, the embellishments showing result of a high degree of skill in engraving, enameling, inlaying, chiseling and filigreeing.

In the Middle Ages the art of jewelry-making declined, but in the fourteenth century it was revived, and has persisted through various stages to the present. Some of the Renaissance workmanship showed a high degree of excellence, combining lightness and delicacy with durability and strength; but much of it, that for example which produced the gaudy ornamentation of Louis XIV's day and some subsequent epochs, had little to recommend it.

Most of the jewelry of recent times is made by machinery. In machine-made jewelry there is much repetition of design and a conspicuous lack of originality. Moreover, the industry has branched out into the manufacture of all sorts of cheap imitations which are poured upon the market to catch the fancy of an indiscriminating public. The flood of machine-made jewelry in Paris, London, Vienna and New York, the principal centers of manufacture, brought about a reaction which started in France late in the nineteenth century. At the head of this movement was René Lalique, an artist in Paris, who began making jewelry characterized by extreme simplicity of design, in

which stones and metals were used without regard to their intrinsic value, but with respect to their adaptability to the pattern. Baser metals were as frequently employed by him as precious stones and gold. In America the return to simplicity in jewelry is identified with the arts-and-crafts movement.

Related Articles. Consult the following titles for additional information:

Agate	Diamond	Opal
Amethyst	Emerald	Pearl
Aquamarine	Garnet	Platinum
Beads	Gold	Precious Stones
Birthstones	Heliotrope	Ring
Brooch	Jade	Ruby
Cameo	Jasper	Sapphire
Carbuncle	Lapis Lazuli	Topaz
Coral	Onyx	Turquoise

JEWFISH, the name given to two species of large fishes well known in American waters. The one, known also as the *guasa*, or *black grouper*, sometimes reaches the weight of seven hundred pounds. It has a large, flat head and huge mouth and is olive-green in color. This fish is common around Mexico, Florida and the West Indies. The other inhabits the California coast, often weighs five hundred pounds, is from five to seven feet long and has flesh of excellent quality for the table.

JEWS, the name commonly applied to the descendants of the people who settled in Palestine in early Bible times, and established there the Israelitish kingdom. In the Old Testament they were called both Hebrews and Israelites. In the period after the loss of national independence the term *Jew* became prevalent, and is the correct name under present conditions, as it denotes a religious body having a common racial descent. It is derived from *Judah*, the name of the tribe which was dominant in the kingdom set up in the southern part of Palestine after the death of Solomon. The Jewish religion, or *Judaism*, was preserved through the establishment of this kingdom, and Jerusalem was the center of the national religion for centuries after the Jews lost their independence.

The early history of the Jews is obtained from the Old Testament, which, in the *Pentateuch*, *Joshua*, *Judges*, *I* and *II Samuel* and *I* and *II Kings*, gives a history from the creation of the world to the destruction of Jerusalem by Nebuchadnezzar, in 586 B. C. The works of Josephus and the records of Egypt contribute also to the history. (For stories of the early Hebrews, see *BIBLE*, sub-head *Bible Stories*.)

In 930 B. C. these people were divided, and they were known thereafter as the tribes of Israel, occupying the northern part of Palestine, and the tribes of Judah, occupying the southern part. Sargon, king of Assyria, took the northern tribes captive in 722 B. C., and eventually they were lost to history. The kingdom of Judah paid tribute to the Assyrian government, but was not overthrown till 586, when Nebuchadnezzar besieged Jerusalem and took the inhabitants to Babylon; then independence of the Hebrew nation came to an end. Cyrus, after overthrowing the Babylonian kingdom, gave the Hebrews permission to return to Jerusalem and rebuild their Temple. The "Priestly Code" brought from Babylon by Ezra was adopted then, and the real Jewish history began.

After the time of Alexander the Great the Jews had to pay tribute to the Egyptians and to the Selucid rulers in Syria. Many went to Egypt, and under the advantages they enjoyed there they became well versed in science, art and statesmanship. The Greek translation of the Bible, the *Septuagint*, was produced at this time. Antiochus Epiphanes, about 170 B. C., forbade, in Jerusalem, Jewish sacrifices, circumcision and the observance of the Sabbath. Altars to idols were built in the small towns, and the people were compelled to observe Greek rites. Judas Maccabeus and his brothers Jonathan and Simon succeeded in gaining a victory over the Syrians in 169 B. C. This family continued in power till the capture of Jerusalem by Pompey, 63 B. C., but the last male representative, Antigonius, was put to death by Herod in 37 B. C. The Herodian line succeeded.

In A. D. 6 both Judea and Syria came under Roman procurators. Claudius gave authority over Judea to Herod, who gained for the Jews Roman citizenship and other privileges. After Herod's death, the Roman governors came into conflict with the Jews, and this led to the destruction of Jerusalem by Titus in A. D. 70 and the banishment of the people. The final overthrow of this people was brought about by the capture of Bethar, the Jewish stronghold, 135. Many Jews in the year 70 went to Arabia, where they gained considerable power. Mohammed regarded them favorably till he found they would not accept his religion, when he began persecuting them. Many went to Syria and Meso-

potamia. In Spain the Jews were famous for their learning and were allowed free worship in their religion and were nearly on terms of equality with the Moors.

In the fourteenth century, however, they were compelled to be baptized and to accept the Christian religion. Those who objected were persecuted or even murdered. Under Ferdinand and Isabella, all who refused to become Christians were commanded to leave Spain, taking neither silver nor gold with them. Many hundred thousand left, to find almost every country hostile to them. Those who went to Portugal were compelled to leave in 1496 by order of King Emmanuel. Since 1837, the Jews have been allowed to return to Spain, but very few have taken advantage of the permission. In the eighth and ninth centuries, the Jews of France were well treated, but during the Crusades they were persecuted and many were massacred in a most horrible manner.

The first real settlement of Jews in England was made under William the Conqueror, who favored them. But when their wealth increased they became very unpopular, and in 1253 their condition became so unbearable that they asked leave to go from England. They were persuaded to remain, but in 1290, under Edward I, they were driven out. Many went to Germany and France, where they received the same treatment that had met them elsewhere. For 300 years, no Jews were allowed in England. In 1655 Cromwell favored their admission, and they were finally permitted to remain. Since then, they have by degrees gained access to public offices, and in 1885 they were admitted to Parliament. In France, since 1790, Jews have had full rights of citizens, and in 1806, under Emperor Napoleon, they were allowed religious liberty.

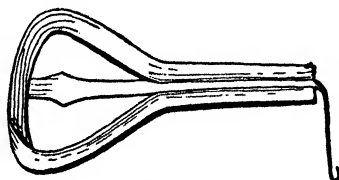
In Russia, under the old régime the Jews suffered terrible persecution, and more than 800,000 left the country and settled in America and parts of Europe. After the revolution of 1917 religious freedom was proclaimed. In Germany, under the dictatorship of Adolf Hitler, the Jews were mercilessly persecuted. In 1936, according to the Jewish Year-Book for that year, the Jews were distributed principally as follows:

Poland	2,845,000
United States	4,228,000
Ukraine	1,574,000
Russia (U. S. S. R.)	2,672,000
Rumania	900,000

The conquest of Palestine by the British in 1917 foreshadowed the setting up of a Jewish state in that country free from persecution from other peoples. This has been accomplished in part. About 175,000 were there in 1936, but hostility of the large Arab majority throws doubt upon ultimate success of the project. Arabs deny Jews equality of opportunity. See ZIONIST MOVEMENT.

Related Articles. Consult the following titles for additional information:
 Bible Nebuchadnezzar
 Cyrus Palestine
 Hebrew Language Semites
 Jerusalem Temple
 Judea World War

JEW'S HARP, a toy musical instrument. It is made of metal, and the sound is produced by holding it between the teeth and inhaling and exhaling air, at the same time striking with the finger the elastic tongue



JEW'S HARP

stretched across the middle of the instrument. It was known as early as 1619.

JEYPORE, *ji por'*. See JAIPUR.

JEZEBEL, *jez'el*, the wife of Ahab, king of Israel. She was a daughter of Ethbaal, king of Tyre, and after her marriage introduced into Israel the Baal-worship of her native country, Canaan. She was therefore hated by the followers of Yahweh (Jehovah) and was a bitter enemy of Elijah. She is represented (*I Kings*, XVI, XIX) as cruel and treacherous and responsible for the murder of Naboth. Fourteen years after the death of her husband she was murdered by Jehu, when, instigated by Elijah, he seized the royal power of Judah and Israel (842 B. C.). See AHAB; JEHU.

JIGGER, **CHIGGER**, or **CHIGOE**, a very curious insect closely resembling the common flea but of minute size. In the United States the name is given to a minute scarlet insect, found in the grass and weeds of the Southern states. It attaches itself to the skin of man and burrows beneath it. Here its eggs are deposited, and troublesome itching sores result unless the



JIGGER

insects are killed. Salt water will relieve the itching. If the bites result in festering sores the wounds should be cut or burned out by a physician. In the Southwestern states the harvest mite is called jigger.

JIMSON WEED. See STRAMONTIUM.

JINRIKISHA, *jin rik'e shah*, a vehicle which has become associated in the public mind throughout the world with the transportation facilities of Japan. However, it is also used to a very considerable extent in China and in some parts of India.

The jinrikisha is a light, two-wheeled carriage, provided with a hood and drawn by a man. Near the outer end of the shafts is a crosspiece, which is used by the runner in pulling the carriage. By attaching cords to the crossbar, one or more outrunners can assist when more than ordinary speed is required or when the load is especially heavy. The puller is known as the *hiki*. He can go at a rapid pace and for long distances, frequently covering from thirty to forty miles in a day; he and his carriage may be engaged for service for about sixty cents a day. The invention of the "riksha," as it is frequently called, is attributed to an American Baptist missionary.

JIJUTSU. See JUJUTSU.

JOACHIM, *yo'a Keem*, JOSEPH (1831-1907), a famous Hungarian violinist. When twelve years of age he appeared in concert at Leipzig, attracting the attention of the musical world, but continued to study for several years. After 1849 he received several important appointments at European courts, and in 1869 he became head of the Royal School of Music at Berlin. His playing was characterized by remarkable sincerity and emotion and by rare purity of tone.

JOAN *jo an'*, **OF ARC**, THE MAID OF ORLEANS (1412-1431), the national heroine of the French people, and to all peoples a noble and inspiring figure. JEANNE D'ARC, as she is properly called, was born in the village of Domremy, France, of peasant parents. While she was still a girl she was deeply affected by the woes of her country, much of which was in the possession of the English. In 1427 Orleans was being besieged by the English, and its fall would have ruined the cause of France. At this time Joan, who had been noted for her solitary meditations and pious enthusiasm, began, as she declared, to see visions and hear angelic

voices, which finally called upon her to take up arms for Charles, to raise the siege of Orleans and to conduct Charles to Rheims to be crowned. At first she was regarded as insane, but eventually she found her way to the king and his councilors, and having persuaded them of her sincerity, received permission to hasten to the deliverance of Orleans. In male dress, fully armed, she bore the sword and the sacred banner, as the signal of victory, at the head of the army.

The first enterprise was successful. In April, 1429, she entered Orleans with supplies, and through the inspiration of her courage the French forced the English from their entrenchments and compelled them to abandon the siege. Other successes followed; Charles entered Rheims in triumph, and at his anointing and coronation Joan stood at his side. She was wounded in her unsuccessful attack on Paris, where Bedford repulsed the French troops, but continued to take part in the war. In the spring of 1430 she attempted to relieve Compiègne; in May, she was taken prisoner by the Burgundians and sold to the English, who wished to destroy her influence with the people.

The peasant maid who had defeated an army and given her people a king was in the hands of her bitterest foes. It was inevitable that the English would condemn her to an ignoble death, for they saw in her the cause of their misfortunes, and they feared that she again might be the inspiration of a French victory. They could not realize that though they might destroy her body, they could never destroy the spiritual influence of the great effort she had made. The French people, disunited, spiritless, without great leaders, had been given a vision of what they might accomplish if they united against the invaders and drove them from the land. The redemption of France did not come at once, but the spirit of French nationalism had been awakened and it continued to grow. Gradually the English began to lose ground, and in 1453, twenty-two years after the martyrdom of Joan of Arc, they possessed nothing of French soil but Calais and two small towns near by. A century later, these places, too, were reclaimed for France.

The Maid of Orleans suffered cruelly from the time she fell into the power of the English. She was taken to Rouen, and after a long inquisitorial trial, accompanied with many shameful circumstances, she was con-

demned to death as a sorceress by the ecclesiastical tribunal. On submitting to the Church, however, and declaring her revelations to be the work of Satan, her punishment was commuted to perpetual imprisonment. But pretexts were soon found to treat her as a relapsed criminal, and as such she was burned at Rouen, May 30, 1431. She died with unshaken courage. In 1456 she was cleared by the Church of all charges against her, and in 1909 Pope Pius X beatified her, giving her the name "Blessed." In March, 1919, the Maid was formally canonized at the Vatican, Pope Benedict taking part in the official ceremonies. She thus became a saint in the Roman Catholic Church.

The story of Joan of Arc has been immortalized in countless poems and plays, and her pictures and statues are found in many lands. In 1915 an equestrian statue of the Maid of Orleans was erected in New York City, on Riverside Drive. It is the work of Anna Vaughn Hyatt. The pedestal was made partly from eighteen tons of stone which were brought from the dungeon at Rouen.

JOB, *jobe*, the hero of an ancient Hebrew poem, which forms one of the books of the Old Testament. Job, an upright man with a family of seven sons and three daughters, with large herds and numerous servants, is suddenly, with the permission of Jehovah and by the agency of Satan, deprived of his possessions and his children and smitten with a sore disease, yet he submits patiently to the divine will. Three friends come to console him, and a large part of the poem is occupied with their speeches and his replies. They attribute his misfortunes to wickedness and hypocrisy. Near the close, God himself is introduced answering Job out of a whirlwind. In the sequel Job is delivered from his calamities, lives 140 years, becomes richer than before and begets seven sons and three daughters. The design of the book seems to be to enlarge men's views of the providence of God. The basis of the story was probably traditional, and it is not known at what time the book of *Job* was written.

JOFFRE, *zhô'fr'*, JOSEPH JACQUES CESAIRE (1852-1930), a French military leader, hero of the first Battle of the Marne, which saved the allied cause early in the World War. Joffre was born at Rivesaltes, in the Eastern Pyrenees, of humble parentage. He

served in the artillery during the Franco-German War, when only a lad, and after the restoration of peace entered the engineering corps. In 1874 he became a captain. Joffre took part in campaigns in Tongking, Dahomey, Madagascar and Timbaktu, and in 1911 was appointed Chief of the General Staff. Though occupying so responsible a position, he was not widely known at the outbreak of the World War, for he was a man of great reserve. His generalship at the Battle of the Marne, however, where the German invasion was thrust back, made him a national hero and a figure of world-wide prominence. In December, 1915, he was appointed commander in chief of the French armies; a year later he relinquished this post and was made marshal of France, the highest honor his country could bestow.

In May, 1917, Joffre and several other distinguished men visited the United States on an official mission to confer on matters pertaining to the war. The commission visited several large cities, going west as far as Chicago and Saint Louis, and everywhere Joffre was received with boundless enthusiasm. In December, 1918, he was made a member of the French Academy, thereby attaining one of the highest civil honors possible to a Frenchman.

JOHANNESBURG, *yo hahn' nes burg*, SOUTH AFRICA, in the Transvaal, thirty-five miles south by west of Pretoria and connected by railway with Cape Town, Port Elizabeth, Durban and Delagoa Bay. The city is at an altitude of 5,735 feet, in the midst of the great South African gold district. It is a modern town in every respect, with broad, well-planned streets, electric lights, telegraph and telephone lines and street cars. The chief public buildings are the courthouse, the public library, the stock exchange, and a number of theaters. The city has also the University of Witwatersrand. It was a Boer city until the South African War, when it was captured by the British in May, 1900. Population, 1931, 203,298 (Europeans), 140,000 (colored).

JOHN, called *the Baptist*, the forerunner of Christ, was born six months before Jesus (their mothers were cousins), of a Levitical family in Judea. He lived a life given up to solitary meditations till A. D. 26, when he began to preach in the deserts of Judea, announcing that the kingdom of heaven was at hand and proclaiming himself the har-

binger of the Messiah. John baptized many converts and testified to the higher mission of Jesus at the time of Christ's baptism in the Jordan. To gratify a vindictive woman, Herod Antipas, tetrarch of Galilee, caused him to be beheaded in prison.

JOHN, the name of twenty-three Popes, among whom the following were most prominent:

John I (Saint John), who was Pope from 523 to 526, was sent to Constantinople by Theodoric to induce Emperor Justin to adopt milder measures toward the Arians, and on his returning without success Theodoric threw him into prison, where he died.

John XII was Pope from 955 to 964. His name was originally Octavian, but on becoming Pope he adopted the name John, being the first Pope to change his name on mounting the Papal throne. He crowned Otto the Great of Germany in 962.

John XIX, Pope from 1024 to 1033, crowned Conrad II in the presence of Canute, the Danish king of England.

John XXII was Pope from 1316 to 1334. He possessed extraordinary abilities, was a patron of learning, wrote some medical treatises and was a zealous worker for the propagation of his faith in distant lands. He lived a simple, student's life himself, but collected vast sums of money for the Church.

John XXIII, Pope or rather anti-pope, from 1410 to 1415, was a Neapolitan. While cardinal, he was prominent in the Council of Pisa. As Pope he called the Council of Constance, by which he was deposed. After four years' imprisonment he was released and made dean of the Sacred College.

JOHN (about 1167-1216), king of England, the youngest son of Henry II, from whom was forced Britain's great charter of liberty. As he was left in youth without any particular provision, he was given the name of Lackland; but his brother, Richard I, on his accession conferred large possessions on John. John obtained the crown on the death of Richard in 1199, although the French provinces of Anjou, Touraine and Maine declared for his nephew, Arthur of Brittany, who was lineally the rightful heir. A war ensued, in which John recovered the revolted provinces.

In 1205 began a great quarrel with the Pope regarding the election to the see of Canterbury, to which the Pope had nominated Stephen Langton. The result was that Innocent III laid the whole kingdom under an interdict and in 1211 issued a bull deposing John. Philip of France was commissioned to execute the decree and was already preparing an expedition when John

made abject submission, even agreeing to hold his kingdom as a vassal of the Pope (1213). John's arbitrary proceedings led to a rising of his nobles, and he was compelled to sign the Magna Charta, or Great Charter, June 15, 1215 (see *MAGNA CHARTA*). But John did not mean to keep the agreement, and obtaining a bull from the Pope annulling the charter, he raised an army of mercenaries and commenced war. The barons, in despair, offered the crown of England to the dauphin Louis, who accordingly landed in England in 1216 and was received as lawful sovereign. The issue was still doubtful when John was taken ill and died.

JOHN III, SOBIESKI (1624-1696), a king of Poland, son of a Polish captain. He served in the French army, returned to Poland to assist in repelling the Russians in 1648 and distinguished himself in several campaigns, winning, in 1667, the rank of commander in chief of the Polish army. On the death of the Polish king, in 1673, John was chosen his successor. His most celebrated achievement was the defeat of a great Turkish army before Vienna in 1683, in a conflict regarded as one of the decisive battles of the world.

JOHN, KNIGHTS OF SAINT, or KNIGHTS HOSPITALERS OF SAINT JOHN, afterward called *Knights of Rhodes* and finally *Knights of Malta*, were a celebrated military and religious Order which originated in a monastery founded at Jerusalem in 1048 by some merchants from Amalfi. The monastery was dedicated to Saint John the Baptist, and the monks, who were called Brothers of Saint John, or Hospitalers, cared for the poor and sick and assisted pilgrims. A branch of the Order was established in America in 1889.

JOHN, SAINT, one of the apostles, often distinguished as *Saint John the Evangelist*, the reputed author of the fourth Gospel, three epistles and *Revelation*. He was the son of Zebedee and Salome and the brother of James. Previous to his call by Jesus he was a fisherman on the Sea of Galilee. His Gospel was written later than any of the others—according to some critics, to refute particular heresies—and contains fuller details of our Lord's conversation and discourses than the other Gospels and is also more doctrinal in character. Of the three epistles, the first has much resemblance to the Gospel; but the other two were considered

doubtful even by the early fathers. After the death of Jesus, John continued at Jerusalem, and later he was at Samaria (*Acts VIII, 14-25*). Tradition handed down by the fathers declares that he died at Ephesus, and if he wrote *Revelation* he must have been banished to Patmos. The time of his death is unknown.

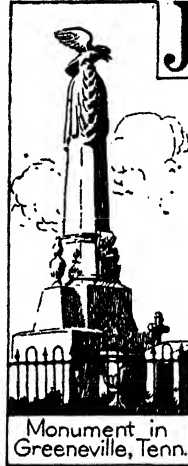
JOHN BULL, the name used to signify the personification of the English people. It was first used in Arbuthnot's *The History of John Bull*, designed to ridicule the Duke of Marlborough. "John Bull," like "Uncle Sam," may be known by his picture. He is represented as a stout fellow with a "tile" hat, swallow-tail coat and a waistcoat adorned with the British flag. His feet are thrust into heavy British boots, and he carries a cane. (See illustration, in article GREAT BRITAIN.)

JOHN OF GAUNT, DUKE OF LANCASTER (1346-1399), fourth son of Edward III of England. He was created Duke of Lancaster in 1362, served in the French wars and became governor of Guienne. On the death of his father-in-law, the king of Castile, he assumed in right of his wife the title of king of Castile and invaded the kingdom to assert his claims. These he subsequently relinquished in favor of Henry of Castile, Pedro's successor, who became John's son-in-law. John's eldest son became king of England as Henry IV.

JOHNS HOPKINS UNIVERSITY, an educational institution located at Baltimore, Md. It was named for Johns Hopkins, a wealthy merchant of that city, who left a fortune of \$7,000,000 to be used in the establishment of a university and a hospital. The university was incorporated in 1867 and formally opened in 1876. The hospital was opened in 1889, and the medical school in 1893. Although the university and hospital have separate funds and controlling boards, they are closely affiliated.

Johns Hopkins has a national reputation for the high rank of its graduate department, and its facilities for research in philosophy and medicine are not surpassed elsewhere in America. Both the graduate and undergraduate departments offer courses in philosophy and psychology, mathematics, the natural sciences, historical and economic science, education, and ancient and modern languages and literatures. The university awards a large number of scholarships and fellow-

ships to American students wishing to do research work in literature, science and medicine. A beautiful campus in the suburbs of Baltimore was presented to the institution in 1902, and new buildings have been constructed. There is a library of 275,000 volumes. In normal years the total student enrollment is over 1,800; the faculty numbers about 600.



Monument in Greenville, Tenn.

JOHNSON, ANDREW (1808-1875), the seventeenth President of the United States. Elected Vice-President in 1864 on the ticket with Lincoln, he succeeded to the Presidency when the Great Emancipator was assassinated, and to him fell the responsibility of directing the reconstruction of the seceded states. It was a burden that would have taxed the ability of even the great Lincoln, especially as Congress was opposed to the moderate attitude announced by the martyred President before his death. Johnson had neither the tact nor the self-control of Lincoln, and he was led to make many rash and ill-advised statements, coming finally to an open breach with Congress. His impeachment by the House of Representatives is the only example in American history of such action against a President. The whole episode is regarded as unifying by historians of to-day, but it can be said of President Johnson that he upheld the independence of the Presidential office, and as a result the nicely adjusted balance between the executive and legislative branches of the government was not destroyed.

Early Life. Johnson was born at Raleigh, N. C., on December 28, 1808. Of his origin, Woodrow Wilson says in his *History of the American People*:

"He came of plebeian stock; had risen, not by address, but by blunt force of character, from among the humbler whites who owned no slaves, boasted no privilege, had no initiative voice in affairs."

The boy's father died in 1812, leaving the family in poverty, and Andrew was put to work as a tailor's apprentice at the tender age of ten. Eight years later he opened a shop for himself in Greenville, Tenn., where,

shortly after, he was married to a girl two or three years his junior. The youthful couple were ambitious, and Mrs. Johnson, herself a woman of considerable education, gave her husband lessons in writing and arithmetic. He had taught himself to read while serving his apprenticeship. Such was the schooling of a future President.

A Political Leader. His first rise to power was his election as alderman in Greeneville, on a workingmen's ticket. Though barely twenty, he had organized the party himself, and his constituents not only returned him twice to the office of alderman, but made him mayor of the town. In 1835 and in 1839 he was sent to the Tennessee house of representatives as a Democrat, and in 1840 was elected state senator. Three years later he entered the national House of Representatives, representing his district until 1853, when gerrymander gave the district a Whig majority. Instead of entering a contest he knew to be hopeless, he announced his candidacy for the position of governor of Tennessee, and was elected. In 1857, after a notable career as state executive, he entered the United States Senate.

Johnson's election to the Senate came at a time when the slavery controversy was approaching a climax. Hardly any other Southern statesman took just the stand he did, for though he believed that slavery should be protected where it had taken root, he was uncompromising in his determination to preserve the Union. When secession actually took place he refused to follow his state, and in March, 1861, declared publicly in the Senate that the secessionists were traitors. The indignation aroused in the South by this statement knew no bounds.

Nevertheless, in the same year he returned to Tennessee, and the following year accepted from Lincoln appointment as military governor of the state. The courage and loyalty he displayed in this trying position gave him a national reputation, and in 1864 he was placed on the ticket with Lincoln. It was felt that the "War Democrats" deserved recognition because of their loyalty, and Johnson was one of their most conspicuous representatives. The compromise ticket was elected, and on April 15, 1865, the Democratic Vice-President was called upon to fill the place of the great man who had safely led the nation through four years of storm and stress.

His Administration. The new President was at first as radical as Congress in favoring a severe policy toward the South, but he soon came under the influence of Secretary Seward and adopted a conciliatory attitude. It is probable, too, that the great responsibility thrust upon him tempered his harsh views, and that in his case time brought about a natural reaction from the hysterical resentment that swept the country when Lincoln was assassinated. As the first step in reconstruction he proclaimed a general amnesty, with certain specified exceptions, and ordered the establishment of provisional congresses in several states. When Congress convened, the preliminary steps had been taken for setting up reconstructed governments in the former seceded states, under the jurisdiction of officials and legislatures elected by the people of those states. These plans of the President at once encountered the opposition of Congress. The contest continued with the greatest bitterness, President Johnson vetoing all the important reconstruction measures and Congress immediately passing them over his veto with insulting resolutions. The crisis in the struggle came when Johnson requested the resignation of Edward M. Stanton, Secretary of War. The Senate refused to ratify this removal, and the President refused to recede from his position. The result was an impeachment trial, the principal charges being violation of law in the removal of the Secretary, and insulting statements in the President's public speeches against Congress. After a long trial, presided over by Chief Justice Chase, the President was acquitted, the prosecution lacking one vote of the two-thirds necessary for conviction. There were other notable events of this administration. In 1865 the Atlantic cable was laid; in 1867 Alaska was purchased from Russia for \$7,200,000, and the same year Nebraska was admitted to the Union.

Though the Democrats had favored Johnson's policy, he had forfeited claims to leadership by deserting the party at the opening of the war, and he was not renominated. His last official act was to pardon all who had been concerned in secession. After his retirement from the Presidency he sought election to Congress and finally, in 1875, entered the Senate. On July 31 of that year he died from a stroke of paralysis, and was buried at Greeneville, Tenn., where a fine monument has been erected in his honor.

Administration of Andrew Johnson, 1865-1869

I. THE PRESIDENT

- (1) Birth
- (2) Early career
- (3) Education
- (4) Political principles
- (5) Character
- (6) Policy as President
- (7) Death

II. FOREIGN AFFAIRS

- (1) Relations with France
- (2) Laying of the Atlantic Cable
- (3) Purchase of Alaska

III. THE ERA OF RECONSTRUCTION

- (1) Johnson's views on reconstruction
 - (a) First harsh
 - (b) Then suddenly lenient
 - (c) Proclamation of amnesty
- (2) Attitude of Congress
 - (a) Freedmen's Bureau
 - (1) Purposes
 - (2) Results
 - (b) Civil Rights Bill
 - (1) Guaranteed negroes a vote
 - (2) Required every candidate for office to swear that he had not taken part in secession
 - (3) Supported by Fourteenth Amendment
- (3) Quarrel between Congress and President
 - (a) On general policy
 - (b) On specific questions
 - (1) Of law
 - (2) Organization of provisional state governments
 - (3) Tenure of Office Act
 - (a) Forbade President to remove any civil officer without consent of Senate
 - (b) Removal of Stanton from office
 - (4) Impeachment of the President

(4) Congressional policy of reconstruction

- (a) Five military districts
- (b) Civil governments provisional and subject to military authority
- (c) All persons, regardless of race or color, not disqualified by participation in a rebellion, to be voters
- (d) Readmission of states with approval of Congress
- (5) Results of reconstruction
 - (a) Admission of the Southern states
 - (b) Practical bankruptcy of the states
 - (c) Rule of "carpet-baggers"
 - (d) Ku Klux Klan
- (6) Election of 1868

Questions

When and where was Andrew Johnson born?

Sketch briefly his career before the outbreak of the Civil War.

Why did he become prominent when Tennessee seceded?

What office did he hold during the war?

Who was Maximilian?

What was the attitude of the United States toward him?

When did the attempts to lay a permanent Atlantic Cable become successful?

Through whose efforts was the enterprise brought to success?

From whom was Alaska purchased?

What was the price paid?

Explain the Civil Rights Bill. Which amendment to the Constitution was passed in order to ensure its enforcement?

What was the Tenure of Office Act?

Why was the President impeached? Was he convicted?

Explain "impeachment."

What provision did Congress finally make for the government of the Southern states?

What is meant by "carpet-baggers"?

What was the Ku Klux Klan?

Related Articles. Consult the following titles for additional information:

Impeachment	Tenure of Office Act
Reconstruction	Stanton, Edwin M.

JOHNSON, HIRAM WARREN (1866–), an American statesman widely known for his fearlessness in upholding political ideals. He was born in Sacramento, was educated at the University of California, and at the age of twenty-one was admitted to the bar. In 1906–1907 Johnson won a notable victory as assistant prosecuting attorney of state in helping convict a group of San Francisco “grafters,” and from that time he was a notable figure in California politics. Elected governor as a Republican in 1910, he carried out his plan of “kicking out of state politics the Southern Pacific Railroad,” and during his term of office he put into effect the progressive policies for which he stood. In 1912 Johnson accepted the nomination for Vice-President on the Progressive party ticket with Theodore Roosevelt, and two years later he was reelected governor. In 1916 he was sent to the United States Senate as a Republican, and was reelected three successive times to that office. Senator Johnson attracted wide attention by his activity in the Senate, and both in 1920 and 1924 was a prominent candidate for the Presidency of the United States.

JOHNSON, RICHARD MENTOR (1780–1850), an American statesman, Vice-President of the United States, was born in Kentucky. He was educated at Transylvania University, was admitted to the bar, became a member of the state legislature and in 1806 was elected to Congress, serving with slight interruption until 1819. He fought in the war with Great Britain in 1812–1813 and, it is said, fired the shot which killed Tecumseh, at the Battle of the Thames. He was a member of the United States Senate from 1819 to 1829 and of the House of Representatives again until 1837, when he was elected Vice-President on the ticket with Van Buren. He was a strong supporter of Jackson. Johnson was again nominee for Vice-President in 1840, but was defeated and was an unsuccessful aspirant for the Presidential nomination in 1844.

JOHNSON, SAMUEL (1709–1784), an eminent English author, son of a bookseller, was born at Lichfield. The most important part of his education was the wide reading in which he indulged in his father's shop. In 1728 he entered Pembroke College, Oxford,

but was obliged by poverty to retire after three years, without taking a degree.

In 1735 he married a widow to whom he was sincerely attached. With the money she provided he started a school, which was not successful, and in 1737 he moved to London, where he entered on his long course of literary toil. His reputation rose very slowly. His poverty was at times almost unendurable, and it is not strange that, always melancholy, he grew more and more pessimistic and expressed his pessimism in such poems as *London* and the *Vanity of Human Wishes*. When *Irene*, a tragedy which Johnson had written before coming to London, was brought out, he received some relief from his poverty.

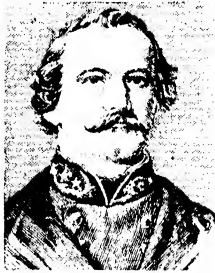
From 1750 to 1752, and again in 1758, Johnson conducted periodicals modeled on the plan of *The Spectator*, but these, *The Rambler* and *The Idler*, with their essays in Johnson's formal, heavy style, were never popular. Meanwhile, Johnson's attention was chiefly engaged with his *Dictionary of the English Language*, a work which appeared in 1755. This dictionary, though it raised his fame, added little to his worldly means; and when in 1759 his mother died, Johnson, to provide money for the funeral, wrote in one week the philosophical novel, *Rasselas*. In this poverty he lived until 1762, when he obtained from the government a pension of £300 a year. He was thenceforth in easy circumstances and could enjoy without restraint the society of Burke, Reynolds, Gibbon, Garriek, Goldsmith and others in the famous club which became so formidable a power in the world of letters. Although Johnson was uncouth in his manners and slovenly in his dress, he was looked up to by these men, and in fact he easily dominated the club. The work of his last years includes *Journey to the Western Isles*, describing a trip to the Hebrides, and *Lives of the Poets*. Johnson was buried in Westminster Abbey.

Boswell's *Life of Johnson* gives us a better idea of the man than we can gain from his own works, because, eminent as he was in his day as a writer, he was still more influential as a conversationalist, and many of his conversations Boswell has reported.

JOHNSON CITY, TENN., a city in Washington County, 106 miles nearly east of Knoxville, on the Southern, the East Tennessee & Western North Carolina (narrow

gauge) and the Carolina, Clinchfield & Ohio railroads. The city lies near the foothills of the mountains, and it attracts many visitors. The East Tennessee state teachers' college and Milligan College are here, and there is also a branch of a United States Soldiers' Home. The city has about forty manufacturing plants, among which are silk and rayon factories. There is a public library and an airport. Population, 1920, 12,442; in 1930, 25,080, a gain of 101 per cent.

JOHNSTON, ALBERT SIDNEY (1803-1862), an American soldier, born at Washington, Ky. He graduated at West Point, entered the army and fought in the Black Hawk War, but resigned in 1834 and went to Texas. He fought with the Texans in their war for independence, became commander of the Texan army and in 1838 was Secretary of War of the new republic. In 1840 he resigned and became a planter. At the outbreak of the Mexican War, he again entered the service of Texas, and at its close he became an officer in the United States army. In 1857 he won distinction in command of an expedition against the Mormons, exhibiting remarkable discretion and courage, both on the march and in his negotiations with the Mormon leaders. He was brevetted a brigadier-general, but at the opening of the Civil War resigned his commission and entered the Confederate army, being placed in command of the forces in the west. During the winter of 1861 he exhibited marked ability in the defense of Kentucky and Tennessee. He was killed at Shiloh, in April, 1862, while leading a brilliant charge at the crucial point of the battle. He won the esteem of military critics on both sides for his management of large forces and his courage in battle.



ALBERT SIDNEY
JOHNSTON

JOHNSTON, JOSEPH EGGLESTON (1807-1891), an American general, born in Prince Edward County, Va. He graduated at West Point in 1829 in the same class with Robert E. Lee, took part in the Black Hawk War and in the Seminole War, but resigned in 1837, to become a civil engineer. In the following year he entered the engineering

service of the army and in 1846 became captain. He served with distinction in the Mexican War, was severely wounded at the Battle of Cerro Gordo, and was brevetted colonel for his conduct there and lieutenant-colonel for his gallantry at Chapultepec. In June, 1860, he became quartermaster-general of the army, with the rank of brigadier-general, but in the following spring he resigned and became brigadier-general in the Confederate army and, later, general.

He took part in the first Battle of Bull Run and for a time had full command of the Confederate forces in Virginia. At Fair Oaks he was wounded and was succeeded by Robert E. Lee. Later he became commander of the military Department of Tennessee, but was defeated by Grant at Jackson, while attempting to relieve Vicksburg. After the battles of Chattanooga, he became commander of all the Confederate forces in the southwest and conducted a brilliant retreat before General Sherman from Chattanooga to the vicinity of Atlanta, winning a great victory at Kenesaw Mountain. Notwithstanding, he was superseded by General Hood; later at the insistent request of General Lee, he was assigned to the command of forces to resist Sherman's advance northward from Savannah. He was several times defeated, and surrendered April 26, 1865. After the war he engaged in business in the South, was elected to Congress from Virginia in 1876 and was appointed United States commissioner of railroads in 1885. Military critics agree in considering General Johnston one of the greatest commanders in the Civil War.

JOHNSTON, MARY (1870-1936), an American novelist, the author of many romantic tales with historic backgrounds. She was born at Buchanan, Va., and was privately educated. Miss Johnston first came to public notice by her novel, *Prisoners of Hope*, a story of colonial days in Virginia. A second romance with much the same setting, *To Have and to Hold*, appeared in 1899 and met with great success. A third, *Audrey*, with the same theme, also was well received. The last two were dramatized. Her later novels include *The Long Roll*, *Hagar*, *The Witch*, *The Fortunes of Garin*, *The Wanderers*, *Foes*, *Sweet Rocket*, *Michael Forth*, *The Great Valley*, *The Slave Ship*, *Croatan*, *The Exile*, *Hunting Shirt*, *Miss Delicia Allen*, and *Pioneers of the Old South*.

JOHNSTOWN, N. Y., the county seat of Fullerton County, forty-five miles northwest of Albany, on the Cayadutta River and on the Fonda, Johnstown & Gloversville Railway. The industries of the city are almost exclusively devoted to the production of gloves and mittens. In Johnstown and the neighboring city of Gloversville there are 150 factories, which supply more than half of all the gloves that are used in the United States. The place was settled in 1760 and was named after Sir William Johnson, whose mansion, erected in 1761, is still standing. There is a Federal building and a Carnegie Library. The courthouse and jail are also of historical interest, for both were built in 1772. Population, 1920, 10,905; in 1930, 10,801.

JOHNSTOWN, Pa., in Cambria County, seventy-six miles east of Pittsburgh, on the Conemaugh River, and on the Pennsylvania and the Baltimore & Ohio railroads. There is a municipal airport. It is situated in an irregular and narrow valley at an elevation of about 1,200 feet. The city became especially well known by the flood of 1889. Heavy rains had so swollen the streams that the dam across the south fork of the river, twelve miles east of the city, gave way and released the water in Conemaugh Lake. Johnstown and the neighboring villages in the valley were very soon submerged in a roaring torrent of water, and about \$10,000,000 worth of property was destroyed, with a loss of at least 2,235 lives. Aid was generously contributed, and the place was at once rebuilt.

There are deposits of bituminous coal in the vicinity, and the city has extensive iron and steel works, coke ovens, tanneries, brick-yards, manufactures of radiators, fire-clay products and other works. There are about 110 industrial plants in the city. Important features are the public parks, Conemaugh Valley Memorial Hospital, Cambria Free Library, a Federal building and the city hall. A stadium seats 17,000. Johnstown was settled about 1790, but it was not incorporated until 1889. Population, 1920, 67,327; in 1930, 66,993.

JOINTS, in anatomy, the joining of the bones to give the various parts of the body freedom of movement. They may be classified as movable and immovable. The movable joints are of four kinds, and are classified as follows:

(1) Ball and socket joints, found at the shoulders and the hips, admit great freedom of motion. In the ball and socket joint the rounded head of a long bone fits into a cavity made by other bones and is held in place by a loose sac, called a capsular ligament, and by surrounding muscles. In the hip the articulation is still further strengthened by a ligament attached to the head of the thigh bone and to the cavity. At the shoulder, the socket is not as deep as at the hip, hence there is much greater freedom of motion.

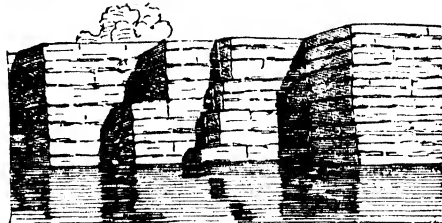
(2) Hinge joints, which admit of motion in two directions, that is, can be bent and straightened, are found in the knee, the fingers, the toes and, in a modified form, between the lower jaw and the cranium. In this joint the bones articulate by ridges that fit into grooves.

(3) Pivot joints, in which one bone rotates on another, as the first cervical vertebra on the second. The power to turn the hand over without moving the shoulder is due to a modified pivot joint at the elbow where the radius rotates on the humerus and over the ulna.

(4) Gliding joints, which admit of but little movement, are found in the wrist and ankle. There are also slight movements between the vertebrae.

Immovable joints are found between the bones of the cranium and face. Those of the skull are designed to protect the brain, for they possess enough flexibility to move in case of accident and may prevent fracture. In movable joints the ends of the bones are covered with a smooth cartilage, which is kept moist by a secretion, called synovia, from a very thin membrane which surrounds the joints. This secretion serves the same purpose that oil does in a machine. Any dislocation in a joint should receive immediate attention, as swelling so soon follows as to make it difficult to replace the bones or, as physicians say, to reduce the dislocation. If medical aid is not at hand the joint should be kept in hot bandages. The same action should be taken in case of a *sprain*, an injury that if neglected may give permanent trouble. See **LIGAMENT**; **TENDON**.

JOINTS, in geology, the cracks or fissures



JOINTS

which divide rocks into more or less regular blocks. They occur usually in systems, the

joints occurring in parallel planes, those which run parallel to the strike being called strike joints, those parallel to the dip, dip joints, and others, diagonal joints. Joints are caused by earthquakes and the contraction of rocks upon cooling or drying. See DIP.

JOINT STOCK COMPANY, the term used in British and Canadian business circles for what corresponds closely to the corporation in America. See CORPORATION.

JOKAI, *yó'kah e*, MAURUS (1825-1904), a celebrated Hungarian novelist, editor and publicist. His literary activity began in 1846 with *Working Days* and continued fifty years, during which time he produced more than a hundred volumes, in which he pictured the political and social life of the Hungary of his day. Jokai was a leader of the Nationalist party in 1848, and fell with it. Subsequently he was many times elected to the lower house of the Hungarian Parliament and in 1897 was called to the House of Magnates. He wrote a history of Hungary, and many of his novels are a romantic treatment of phases of the same subject. *The New Landlord* is considered his masterpiece.

JOLIET, ILL., the county seat of Will County, forty miles southwest of Chicago, on the Desplaines River, on the Illinois & Michigan Canal and on the Chicago & Alton, the Chicago, Rock Island & Pacific, the Atchison, Topeka & Santa Fé, the Elgin, Joliet & Eastern, the Chicago, Milwaukee, Saint Paul & Pacific, and Michigan Central railroads. A state penitentiary is located here, and the city has a public library, hospitals, the Saint Francis and the Saint Mary academies, a great township high school, a Masonic Temple and a clubhouse for working men, built by the Illinois Steel Company. The industrial establishments are large steel, wire and tin plate works, stove factories, machine shops, implement works and other factories. The steel industries in normal times employ 8,000 men. A number of large limestone quarries are found in the vicinity. Joliet was settled about 1831 and was incorporated as a city in 1852. Population, 1920, 38,442; in 1930, 42,993.

JOLIET, *zho lyayf*, LOUIS (1645-1700), a Canadian explorer, the first to ascertain correctly the geography of the Mississippi River. He was born in Quebec and educated for the priesthood, but became a trapper, explorer and student of hydrography. Commissioned

by Frontenac, governor of Canada, to explore the course of the Mississippi, he set out, in 1673, with Father Marquette and five companions, the party embarking in two canoes from Green Bay, Wisconsin. They ascended the Fox River, carried their canoes overland to the Wisconsin, reached the Mississippi and explored its upper sections. Descending the Mississippi to a point beyond the mouth of the Arkansas, they turned back when convinced that the river flowed into the Gulf of Mexico and not into the Pacific. The party returned to Quebec by way of the Illinois River, the Chicago River and Lake Michigan. Joliet wrote a summary of the expedition from memory, after losing all his records when his canoe capsized in the Saint Lawrence.

JOLY DE LOTBINIERE, HENRI GUSTAVE, SIR (1829-1908), a Canadian statesman, born and educated in France. He emigrated to Canada, practiced law in the city of Quebec, and in 1861 was elected to the Canadian Assembly as a Liberal. From 1867 to 1874 he sat in the House of Commons, and in 1878 he became premier of Quebec. Retiring in 1885, he reentered the House of Commons ten years later, and from 1900 to 1906 was lieutenant-governor of British Columbia.

JOLIOT, FREDERIC AND MARIE. See CURIE, PIERRE AND MARIE.

JONAH, one of the minor prophets, son of Amittai, and according to *II Kings* XIV, 25, a contemporary of Jeroboam II, was born at Gath-Hepher, in Galilee. The book which bears his name is historical, rather than prophetic, and the story of Jonah remaining three days and three nights in the belly of the fish has been regarded by some as an allegory, a parable or a myth. Mention of it is made, however, by Christ, in *Matthew* XII, 40. Jonah's grave is shown at Mosul, the ancient Nineveh, and also at Gath.

JONATHAN, in Bible history, was the son of Saul, first king of the Israelites. Jonathan was the devoted friend of David, and their love for each other is often cited as an example of perfect friendship. For the story of David and Jonathan, see the article BIBLE, subhead *Bible Stories*.

JONES, JOHN PAUL (1747-1792), a famous commander in the American naval service during the Revolution, was born in Kirkeudbrightshire, Scotland. In 1773 he emigrated to Virginia, and added "Jones"

to his real name, JOHN PAUL, for what reason is not known. On the outbreak of the Revolutionary War he offered his services to the United States. He was successively in command of the *Alfred*, *Province*, *Ranger* and *Bon Homme Richard*. It was as commander of this last vessel that he won, in 1779, a famous victory over the English sloop-of-war



JOHN PAUL JONES

Serapis, after a fierce engagement off Flamborough Head. On his return to America he did not receive from Congress the consideration he had expected and, in resentment, entered the Russian service with the rank of rear-admiral. This act took some of the luster from his name, and in 1915 excluded him from the American Hall of Fame. (See HALL OF FAME). Owing to the jealousy of Russian commanders, Admiral Jones soon retired from the service and went to Paris, where he died. In 1905 a search was instituted for his remains, which were at length discovered, brought to the United States and buried with military formality at Annapolis, Md.

JON'QUIL, a bulbous plant, a species of narcissus, allied to the daffodil. It has long, rushlike leaves. The flowers, very fragrant, open at the tip of straight, crisp, leafless stems. They are used in the manufacture of toilet waters and extracts.

JON'SON, BEN or BENJAMIN (1573?-1637), a celebrated English dramatist, the contemporary and friend of Shakespeare. He was born at Westminster and was placed in the Westminster or Grammar School at an early age, but was withdrawn, it is said, by his stepfather, a master bricklayer, who wanted his assistance in the business. He soon tired of this occupation, entered the army as a private soldier and showed much personal courage during a campaign in Holland. Returning to England, he began his



BEN JONSON

career as an actor, and in 1598 his drama, *Every Man in His Humor*, was produced, Shakespeare playing a part in it. A duel, in which he killed his antagonist, led to Jonson's imprisonment, and after his release he was deprived of his possessions and branded on the thumb.

In 1599 he brought out his comedy, *Every Man Out of His Humor*, which was followed by *Cynthia's Revels*; *The Poetaster*; *Sejanus*, a tragedy; *Volpone*; *Epicoene, or the Silent Woman*, his best work, and *Catiline*, a tragedy. In 1619, on the death of the poet laureate, Jonson was appointed his successor, and the salary was raised to the sum of \$500 by Charles I. Much of his time was spent at the Apollo, Mermaid and other taverns, feasting, drinking and engaging in those brilliant contests of wit in which in earlier days Shakespeare also had taken part. His latter days were spent, not perhaps in



JONQUILS

much prosperity, but certainly in fame and honor, as the acknowledged chief of English literature. He died of an attack of palsy, leaving behind him an unfinished pastoral poem of great beauty, *The Sad Shepherd*. Jonson was buried in Westminster Abbey, where a monument was erected to his memory with the inscription, "O rare Ben Jonson." Jonson's best dramas are excellent in

plot and development, have strongly conceived characters and excellent traits of humor, but he is sometimes forced and unnatural and deals perhaps too much with passing manners and eccentricities. He had genuine lyrical power, which is seen in his short poems and the songs interspersed in his masques. His *Drink to me only with Thine Eyes* is still a popular favorite.

JOPLIN, Mo., in Jasper County, sixty-eight miles west of Springfield, on the Missouri Pacific, the Saint Louis & San Francisco, the Santa Fe, the Kansas City Southern, and the Missouri, Kansas & Texas railroads. It is in the center of the zinc and lead fields of Southwestern Missouri, which are the most important in the United States. There are extensive smelting works, white lead and paint factories and large foundries, machine shops and flouring mills. A valuable trade from a large agricultural district centers here. The especially notable structures are a Federal building, a Carnegie library, an opera house, and a Y. M. C. A. There is an airport of 319 acres. Joplin was settled in 1870 and was incorporated three years later. Population, 1930, 33,454.

JOPPA. See **JAFFA**.

JORDAN, the most important river of Palestine, and of unusual historical interest, because of the events connected with the life of Christ. It rises in the northern part of the country and is formed by the union of several small streams, which have their sources in the mountains. The river flows southward through Lake Huleh, or the biblical Merom, and the Lake of Tiberias, or Sea of Galilee, entering the northern end of the Dead Sea. The distance between its source and its mouth in a straight line is about sixty-five miles, but owing to its winding course the length is 200 miles.

The Jordan is a very rapid stream and descends during its course from an altitude of about 700 feet above sea level to that of 1,300 feet below sea level. Between Lake Huleh and the Sea of Galilee it falls sixty-nine feet to the mile, and below the Sea of Galilee its average fall is nine feet to the mile. Where it enters Lake Huleh it is about 100 feet wide; between the Sea of Galilee and its mouth it varies in width from ninety to 250 feet, and at its mouth it is 540 feet wide. Its usual depth below the Sea of Galilee is from two to three feet, but occasional depressions in the river bed

cause pools of greater depth. Except during the period of flood, the river is navigable in many places. It is also crossed by a bridge at a point a little below Lake Huleh and another below Lake Tiberias.

The Jordan flows through a remarkable valley, which consists of a smaller valley within a large one. The great valley, called the Ghor, varies in width from one to sixteen miles and is bounded by precipitous ridges, which in places attain a height of from 3,000 to 4,000 feet. The small valley, called the Zor, which is the real valley through which the river flows, is narrower, varying from one-half mile to two miles in width, and in many places is bounded by steep sides. During the rainy season the valley of the Jordan is covered with grass; and trees, such as the tamarisk, the acacia, the oleander and other trees, flourish.

The historic importance of the Jordan is out of all proportion to its economic value. By separating the ancient country of the Israelites from the desert and providing a sanctuary for the development of their religious and cultural life, this river had a vital part in shaping the history and development of Western civilization. See **PALESTINE**.

JORDAN, DAVID STARR (1851-1931), an American educator. He was born in Gainesville, N. Y., and attended Cornell University, where he became instructor in botany in 1870. Two years later he was professor of botany and biology in Lombard University, Galesburg, Ill., and at this time he began the study of fishes under the instruction of Agassiz. From 1875 to 1879 he was a professor in biology at Butler University, Indianapolis, Ind., and in 1885, after having served as professor of zoölogy at Indiana University, he was made president of that institution. In his connection with the United States Fish Commission he made many valuable researches and investigations. From 1891 to 1913 he was president of Leland Stanford Junior University. Upon his retirement the position of chancellor was created for him, in order that he might maintain some connection with the university and yet give further study to the problems of international peace and arbitration, of which he is a leading advocate. After 1912 he wrote voluminously against war. In addition to many reports and papers prepared for the Fish Commission, he has written various

books, including a *Manual of Vertebrate Animals of the Northern United States*, *Science Sketches*, *Fishes of Northern and Middle America*, *Care and Culture of Men*, *Imperial Democracy*, *A Guide to the Study of Fishes*, *War's Aftermath*, *War and the Breed* and *Ways to Lasting Peace*.

JOSEPH, *jo'sef*, one of the two sons of the patriarch Jacob by his favorite wife, Rachel. His story is told in these volumes in the article **STORY TELLING**.

JOSEPH, the husband of Mary, the mother of Jesus, was a descendant of the House of David, though resident at Nazareth, where he followed the trade of a carpenter. Early tradition represents him as an old man at the time of his marriage, and he seems to have died before the commencement of the public ministry of Jesus. His day in the Roman Catholic calendar is March 19.

JOSEPHINE, *zho za feen'*, MARIE ROSE (1763-1814), empress of the French, wife of Napoleon Bonaparte. She was married to the Vicomte de Beauharnais, by whom she had two children, Eugène and Hortense. In 1794 her husband, who had been commander of the army of the Rhine, was executed by order of the Convention. After the fall of Robespierre she paid a visit to Napoleon to thank him for restoring the sword of her husband, and she so pleased him that he soon after married her (1796). Josephine's friendly manners won the hearts of everybody and helped to secure her husband's position. When Napoleon ascended the throne in 1804 she was crowned along with him. But the fact that the union was childless stood in the way of Napoleon's ambition to become the founder of a dynasty, and in 1809 Josephine was divorced. She retained the title of Empress, and was allowed a large annual grant.

JOSEPHUS, *jo se'fus*, FLAVIUS (37-?), an illustrious Jewish historian, born at Jerusalem of royal lineage and well educated. At the outbreak of a war between Romans and Jews he was made defender of the province of Galilee. He was captured by Vespasian and kept in imprisonment three years. Subsequently he lived in Rome and devoted himself to literary studies, assuming the name Flavius. He lived to the end of the century, but the exact time of his death is not known. Notwithstanding their inaccuracies, his writings have a high value as history, supplying narratives of events

nowhere else recorded. These include *Jewish Antiquities*, a history of the Jews from the earliest times to the reign of Nero; an *Autobiography*, covering the period of his military activity, and *History of the Jewish War*.

JOSH BILLINGS. See SHAW, HENRY WHEELER.

JOSHUA, the successor of Moses in the command of the Israelites, the son of Nun, of the tribe of Ephraim. He was nominated by Moses to succeed him in the command of the army of Israel, led the Israelites over the Jordan and in the course of seven years conquered the greater part of Palestine and divided the country among the tribes. He died at Timnath-Serah, in Mount Ephraim, at the age of 110. His history is contained in the book which bears his name and of which he is usually regarded as the author.

JOSIAH, king of Judah, succeeded his father Amon at the age of eight years (639 B. C.). He took an active part in the reform of public worship and commenced the restoration of the temple, during the progress of which the high priest Hilkiah discovered the book of the law, thought by some to be substantially the same as the book of *Deuteronomy*. In Josiah's thirty-first year, prompted probably by friendship for the king of Assyria, he marched out against Pharaoh Necho, who was on his way to attack that kingdom. The two armies met at Megiddo, where Josiah was slain.

JOURNALISM. See NEWSPAPER.

JOURNALISM, SCHOOLS OF. The first American school of journalism established as a distinct department of a university was opened in 1908 at the University of Missouri. In 1903 Joseph Pulitzer donated \$1,000,000 to found a school of journalism at Columbia University. He bequeathed a like sum in his will, and the school was opened in 1912 after his death. There are now over 200 American colleges and universities which provide instruction in journalism, and twenty or more that have schools or departments or separately organized courses. The movement is especially strong in the Middle West. One of the newer schools is the Joseph Medill, a department of the School of Commerce of Northwestern University, Chicago. The course of study at Columbia is typical of the curricula offered by university schools of journalism. It includes the ethics and law of journalism, besides courses in practical

law, rhetoric and composition, with especial regard to the requirements of newspaper work; and advanced courses in literature, United States history, contemporary European history, economics, sociology and political science.

JU'AN DE FU'CA, a strait between Vancouver Island and Washington, an arm of the Pacific Ocean, connecting the sea with the Strait of Georgia on the north and with Puget Sound on the South. It is about a hundred miles long and from fifteen to thirty miles in width. The strait is important commercially as a direct water route to the Pacific for the cities of Vancouver and Victoria in British Columbia; and for Seattle and Port Townsend in Washington.

JUAN FERNANDEZ, *hwahn fer nahn' dath*, a group of small islands in the South Pacific Ocean, about 400 miles off the coast of Chile, to which the group belongs. The two principal islands are Mas-a-Tierra, about 300 miles west of Valparaiso; and Mas-a-Fuera, 100 miles farther west. In 1935 these two islands were created national parks under control of the Chilean government. Most of the others in the group are bare ocean rocks. They are all of volcanic origin, and constitute the only parts left of a submerged continent. Mas-a-Tierra, the island commonly referred to as Juan Fernandez, is about thirteen miles long and four miles wide. The general aspect of the island is most picturesque, its roughly etched mountainous surface being interspersed with rich, fertile valleys. Conspicuous above the wooded hills about it is the anvil-shaped El Yunque, highest point of land, with an altitude of over 3,200 feet. The valleys open into the only anchorage of the island, Cumberland Bay. Mas-a-Fuera is a flat-topped plateau about 3,000 feet high. Sandalwood trees, giant ferns and semi-tropical fruits are native to the islands, birds of many colors fly above them, and on Mas-a-Tierra are wild descendants of the sheep, goats and pigs with which the island was stocked by the Spanish seaman Juan Fernandez, who discovered the group in 1563. In later years, pirates used to anchor their vessels in Cumberland Bay and remained to replenish their supplies of water and fruit. On several occasions Mas-a-Tierra has been used by the Chilean government as a penal colony. See map opposite page 3350.

Between 1704 and 1709, Alexander Selkirk,

a Scottish mariner, was marooned on Mas-a-Tierra. His adventures on the island inspired the famous novel by Defoe, *Robinson Crusoe*. A tablet commemorating Selkirk's experience was erected on a high rock on the island. See ROBINSON CRUSOE.

JUAREZ, *hwah'res*, BENITO PABLO (1806-1872), a president of the Mexican republic. He was born of pure Indian parentage, received a good education, was admitted to the bar and after holding various important public offices, was elected president in 1861. As the Mexican government at his accession was bankrupt, he declared the suspension of payments on the foreign debt for two years, a step which occasioned the interference of Britain, Spain and France. Troops were landed in Mexico in 1862, but Britain and Spain soon retired, leaving Napoleon III to carry out his plans alone. Maximilian of Austria came, on Napoleon's invitation, to assume the throne, but Juarez, in spite of defeats and losses, continued to head a resistance, and when Napoleon under pressure from the American government withdrew his troops in 1866, the republicans carried all before them. Maximilian was captured and shot, and Juarez was reelected to the presidency (1867), which he held till he died. See MAXIMILIAN; MEXICO, subhead *History*.

JUAREZ, MEXICO. See CIUDAD JUAREZ.

JU'BILEE, YEAR OF, an institution among the ancient Hebrews by which for twelve months every fiftieth year society was shaken out of its accustomed channels; all slaves and captives were released; estates (with few exceptions) sold in the interim following the preceding jubilee reverted to the original owners or to their descendants; the land was not cultivated, but left fallow. The object was to prevent the growth of an oligarchy and to equalize the fortunes of families and tribes. It has been doubted whether the law of jubilee was ever actually observed until the return from Babylonian exile, when, for a time at least, it came into operation.

JUD'AH, the fourth son of the patriarch Jacob by his wife Leah, the forefather of one of the twelve tribes.

JU'DAS, surnamed ISCARIOT, was one of the Twelve Apostles of Jesus. Having betrayed his Master into the hands of the Jewish priests for thirty pieces of silver, he committed suicide out of remorse for his crime. It is supposed that the name *Iscariot* means *man of Kerioth*. Kerioth was a small

town in Judea, while Galilee was the home of the other disciples.

JUDAS, or **JUDE**, brother of James, one of the twelve apostles. Matthew and Mark call him Thaddeus, surnamed Lebbaeus. Nothing is known of his life. By many he is considered the author of the *Epistle of Jude*.

JUDAS TREE a name given to a number of trees of the same genus and belonging to the same family as the locust. The name originated in the tradition that Judas hanged himself on one of these trees, which grow wild throughout the Orient, in southern Europe and in tropical America. One species, called the *red bud*, is common in the warmer parts of the United States. This has pointed leaves and produces numerous clusters of bright red flowers in early spring, before the leaves appear on the branches.

JUDE, one of the books of the New Testament. Its acceptance by the early Church was delayed until, like the writings of the evangelists, its divine inspiration was undoubted. In it the apostle denounces the heresies of the Simonians, the Nicolaitans and the Gnostics and appeals to the members of the Christian Church to adhere faithfully to its teachings. It was probably the work of Judas, a brother of James.

JUDE'A, a term applied, after the return of the Jews from exile, to that part of Palestine bounded on the east by the Jordan and the Dead Sea, on the north by Samaria, on the west by the Mediterranean and on the south by Arabia Petraea. Jesus was born in Bethlehem, a small town of Judea. See **PALESTINE**.

JUDGE, *jud*, a person duly invested with authority to preside over a court and to determine questions between parties according to law. The term is quite a general one, being applicable to any one appointed to sit in a court of law and try cases; but certain judges are designated by particular titles, as *justice*, in the Supreme Court of the United States, and *lord justice*, in Great Britain. The judge at common law decides points of law and enables the jury rightly to decide questions of fact, while in equity he decides both classes of questions. A judge cannot be prosecuted for the consequences of his decisions, except in the case where he may have acted without jurisdiction, nor can he officiate in a case where he has a personal interest, unless it be merely his common interest as a citizen. See **LAW**; **COURTS**; **PROCEDURE**.

JUDGES, **BOOK OF**, one of the books of the Old Testament, so called because the greater part of the narrative is occupied with the history of the judges who were raised up to deliver their countrymen from the oppression of their neighbors.

JUDGMENT, in law, the judicial determination and decision of a court in an action. It is either *interlocutory* or *final*. In the former case it is given only on some particular point or proceeding; upon the final judgment execution may follow, unless it be appealed against, suspended or recalled. See **PROCEDURE**.

JUDGMENT, in logic, a mental act by which we examine and compare two or more ideas or concepts and ascertain their relations. In the process of thinking, the judgment and the concept interact and are interdependent. For example, we form a concept or abstract idea of hardness, apart from an object with which it is associated; we form a concept of wood. By putting the two ideas together we form the judgment: *wood is hard*. In building up concepts we necessarily form many judgments, and in turn use the concepts to arrive at higher judgments. Both concepts and judgments are constantly undergoing change as a man's experience broadens; both are involved in the growth of his ideas and opinions upon every subject which occupies his thought. See **CONCEPT**; **REASON**.

JUDICIAL DEPARTMENT OF CANADA. Every power, executive, legislative, or judicial, exercised by the Dominion or provincial governments, is subject to the constitution. As with all statutes or laws, the meaning of this constitution must be interpreted by judges who are authorized to do so. The judiciary is thus the third great department of the government. The judges of the provincial courts, from the highest to the lowest, can and do decide on constitutional questions that arise under the laws governing their respective provinces. The judges of the provinces are appointed and paid by the Dominion government, but the organization and maintenance of their courts are in the power of the provincial governments. It is worthy of notice that the British North America Act made no specific provisions for a federal court. It provided for the appointment of the judges of the provincial courts by the governor-general, but in regard to federal courts it merely said that—

"The Parliament of Canada may, notwithstanding anything in this Act, from time to time provide for the constitution, maintenance and organization of a general court of appeal for Canada, and for the establishment of any additional courts for the better administration of the laws of Canada."

The problem of creating a Supreme Court for Canada was an important one for the first premier, Sir John Macdonald, but it was not until 1876, in the Premiership of Alexander Mackenzie, that the court was finally established. Since that time two other Federal courts, the *exchequer court* of the Dominion and the *admiralty court*, have been established. The admiralty court is, properly speaking, a division of the exchequer court which has jurisdiction over all matters pertaining to navigation and shipping.

Related Articles. Consult the following titles for additional information:

Admiralty Court	Canada (Government)
Exchequer Court	Supreme Court
of Canada	of Canada

JUDICIARY, *ju dish'e ary*. See COURTS.

JUDSON, HARRY PRATT (1849-1927), an American educator, the successor of William R. Harper as president of the University of Chicago. He was born in Jamestown, N. Y., and was educated at Williams College. Between 1870 and 1885 he was principal of a high school in Troy, N. Y., and in 1883 received a master's degree from Williams College. From 1885 to 1892 Professor Judson occupied the chair of history and pedagogics in the University of Minnesota, in the latter year becoming professor of political science at the University of Chicago, then in its infancy. When President Harper died, in 1906, Professor Judson, who had previously been appointed dean of the faculties, became acting president of the university, and received formal appointment to the office in 1907. He retired in 1923.

He was an authority on international law, and the author of various works on history and political science.

JUG'GERNAUT, or **JAGANNATHA** (lord of the world), the name given to the Hindu god Krishna and to a very celebrated idol of this deity in a temple specially dedicated to Jagannātha at Puri, on the Bay of Bengal. The idol is a rudely cut wooden image, with a red body, black face and gilt arms; the mouth is open and blood-red; the eyes are formed of precious stones. It is covered with magnificent vestments and is seated upon a throne between two others—

his brother Bala-Rama and his sister Subhadra, colored respectively white and black. Great numbers of pilgrims, sometimes a hundred thousand, at the time of the festivals of Jagannātha, come from all quarters of India to pay their devotions at this shrine. On these occasions the idol is mounted on a huge car resting on sixteen wheels and is drawn by the pilgrims to his summer home. The task requires several days, on account of the great weight of the car and the sandy condition of the roads, and the pilgrims, becoming exhausted, usually secure professional car haulers to complete the task. Because of British influence, it is no longer true that religious devotees prostrate themselves before the car to be crushed.

JUGO-SLAVIA, *joo'go slah'vi a*, a country organized after the World War partially on the ruins of the defeated Dual Monarchy, Austria-Hungary, and the addition of the kingdoms of Serbia and Montenegro, with boundaries adjusted as nearly as possible to the theory of "self-determination of peoples." For the first ten years of its existence it was officially the KINGDOM OF THE SERBS, CROATS, AND SLOVENES. That name being somewhat awkward, though definitive, in 1929 the name was changed to JUGO-SLAVIA, and later became popularly and finally legally, YUGO-SLAVIA. The word *Jug* is Slavic, meaning *the South*; *Jugo-Slavia*, then, means *the State of the Southern Slavs*.

Size and Location. The kingdom which is the homeland of the Serbs, Croats, and Slovenes, and minority races lies along the eastern shore of the Adriatic Sea; also to the west of this nation is the northeast corner of Italy. At the north Austria and Hungary border it. To the east are Rumania and Bulgaria, and on the south is Greece. At the southwest corner Albania juts into the country, and at this point Jugo-Slavia is cut off from the sea. The area of the country is 95,761 square miles, practically the same as Oregon. The population at the 1931 census was 13,930,918. The capital is Beograd, called Belgrade until 1929.

The People. The old Dual Monarchy was a strange mixture of peoples, languages and religions, largely Slavic by racial division. The Serbs were the most numerous; they occupied principally Serbia, Montenegro, Bosnia, Herzegovina, and Dalmatia. Second in numerical strength were the Croats, found principally in Croatia and Slavonia. The

Slovenes, smallest in number, were found in Carniola, Carinthia, Southern Styria, and Istria. Imbued with the spirit of cohesion and independence, the defeat and inevitable dismemberment of Austria-Hungary gave these nationalities their opportunity to form a new nation.

It was impossible, because of the distribution of races in Central Europe, to organize exactly on racial lines. However, in the total population of about 14,000,000, eighty-five per cent of the people belong to the groups above named. The minority groups included about 500,000 Germans, many of whom left for Germany or Austria; 465,000 Hungarians, some of whom later went to Hungary to make their homes; 400,000 Albanians, most of whom remained; and 230,000 Rumanians, near the western boundary line established for the enlarged Rumania. Nearly all the people employ the Serb-Croat language; it is the tongue of 12,000,000 people. The Slovene is practically a dialect of this.

The Croats, Slovenes, and Dalmatians are largely Roman Catholics, while the Serbs and some Montenegrins adhere to the Greek Orthodox Church. About a million Montenegrins are Mohammedans. There are not more than 225,000 Protestants.

Occupations. Though a part of the country is quite mountainous, there are large areas in plains, and here agriculture is the dependence of the people, though the methods they employ are not modern. There are minerals in abundance in the rugged sections, but much of the mining area is not yet worked. The most important ore is iron.

Transportation. There are about 6,000 miles of railway, three-fourths of which are state-owned and -operated. There is air-plane connection between Beograd and all the principal capitals of Europe. The waterways are important avenues of commerce; the Danube, the Save, and the Drave rivers and some lesser streams afford about 1,200 miles of navigable waters.

Government. Jugo-Slavia is an hereditary limited monarchy; the head of the state is the king. The law-making power is the Senate and Chamber of Deputies. The first king of the country was Alexander I, who was assassinated at Marseille, France, in 1934. His son, Peter II, succeeded him at the age of twelve; he reigns through a regency.

Related Articles. For descriptions of various countries and provinces included in Jugo-Slavia consult the following titles:

Bosnia	Montenegro
Croatia and Slavonia	Serbia
Dalmatia	

JUGULAR VEIN, one of the large trunks by which the greater part of the blood that has circulated in the head, face and neck is returned to the heart. There are two jugular veins on each side, an external, or superficial one, lying just underneath the skin, and an internal, or deeper, one, near the carotid artery. The cutting of an internal jugular vein is usually followed by death.

JUJUTSU, or **JUJITSU**, *joo jit'soo*, a Japanese method of defense or offense without weapons. It has been popular in Japan for centuries, but until recently was taught only to privileged classes, who took oath not to reveal the system. Now it is the basis of all physical culture that is taught in Japan.

Recently it has become popular in Europe and America, for it is recognized as one of the best possible methods of physical training. It consists not in a display of physical strength, but in the practice of certain twists, blows or clutches which will incapacitate an opponent, and it thus demands a knowledge of anatomy. The word itself means *muscle science*.

In his *Out of the East*, Lafcadio Hearn, one of the world's authorities on Japan, presents this information:

In jujutsu there is a sort of counter for every twist, wrench, pull, push, or bend; only the jujutsu expert does not oppose such movements. No; he yields to them. But he does much more than that. He aids them with a wicked sleight that causes the assailant to put out his own shoulder, to fracture his own arm, or, in a desperate case, even to break his own neck or back.

JULEP, in medicine, a solution of sugar in aromatic water, not so concentrated as syrup. In the United States the name is given to a drink, composed of brandy or whisky, sugar, pounded ice and a seasoning of mint. It is also called mint julep.

JULIAN, in full, **CLAUDIUS JULIANUS**, called **JULIAN THE APOSTATE**, (331-363), was a Roman emperor. He was brought up in the Christian religion, studied philosophy and letters and resided in Athens, where he was induced to accept paganism. Having received command of an army against the Alemanni, he defeated them at Strassburg and drove them beyond the Rhine. He also displayed great talent as an administrator in

Gaul. The emperor became jealous of Julian and recalled his best troops, under pretense that he wanted to employ them against the Persians. This order caused a rebellion among the soldiers, who proclaimed Julian emperor in 360, in spite of his own resistance. Constantius prepared to proceed against him, but soon after died, and Julian was generally recognized as emperor. He sought to restore the heathen worship in all its splendor, and on that account he opposed Christianity as much as was in his power, without, however, persecuting the Christians themselves. In 363 he headed an expedition against the Persians and took several cities, but was mortally wounded in battle.

JULIAN CALENDAR. See CALENDAR.

JULIUS, the name of three Popes, the most distinguished of whom were the following:

Julius I, Pope from 337 to 352, was noted for the assistance he gave to the bishops in their opposition to the son of Constantine. He is considered a saint, and is honored as such in the Roman Catholic Church, his date being April 12.

Julius II, Pope from 1503 to 1513, gave his attention chiefly to the political and military movements to restore Papal sovereignty and end foreign rule in Italy. In pursuance of his policy he entered, in 1508, into the League of Cambray with Louis XII, Emperor Maximilian and Ferdinand of Aragon. When the purposes of this league had been attained, he withdrew and joined the Holy League. The Holy League secured to the Papal government a controlling influence in France, Northern Italy, Bologna, Reggio and some smaller Italian states.

Julius III, Pope from 1550 to 1555. He was one of the three legates appointed to preside over the Council of Trent, which he reopened as Pope in 1551.

JULY, the seventh month in the modern calendar, having thirty-one days. In the Roman year it bore the name of *Quintilis*, as originally it was the fifth month. Its change of name to *Julius* was in honor of Julius Caesar, who was born on the 12th of the month.

July is the midsummer month in northern climes, when many garden flowers are in full bloom, and the birds begin to gather in flocks preparatory to their migration southward. It is generally a month of fair skies and many days of sunshine, and the lovely freshness of June is likely to be replaced by hints of the fall of the year. Leaves begin to droop and the grass to lose its velvety greenness. In American history July is honored as the

month in which the United States had its birth as an independent nation. The water lily is the special flower of July, and its birthstone is the ruby.

Special Days for Observance. *Dominion Day* and *Empire Day* are celebrated in Canada on May 23 and July 1, the first in commemoration of Confederation. July 4, the anniversary of the adoption of the Declaration of Independence, is the greatest patriotic holiday of Americans. In France, on July 14 is celebrated the fall of the Bastille (see BASTILLE).

Anniversaries for Celebration. The following birthdays of notable people fall in July:

Nathaniel Hawthorne, July 4, 1804.
Giuseppe Garibaldi, July 4, 1807.
Stephen C. Foster, July 4, 1826.
David G. Farragut, July 5, 1801.
John Huss, July 6, 1369.
John Paul Jones, July 6, 1747.
John D. Rockefeller, July 8, 1839.
Elias Howe, July 9, 1819.
John Calvin, July 10, 1509.
John Quincy Adams, July 11, 1767.
Julius Caesar, July 12, 100 B. C.
Henry D. Thoreau, July 12, 1819.
Rembrandt, July 15, 1606.
Sir Joshua Reynolds, July 16, 1723.
Mary Baker Eddy, July 16, 1821.
Isaac Watts, July 17, 1674.
John Jacob Astor, July 17, 1763.
William Makepeace Thackeray, July 18, 1811.
Alexander Dumas, the Elder, July 24, 1802.
Simon Bolivar, July 25, 1783.
Arthur James Balfour, July 25, 1848.
Thomas Campbell, July 27, 1777.
John Ericsson, July 31, 1803.

The following important events occurred in July:

Debate on the Declaration of Independence, begun July 1, 1776.
Battle of Gettysburg begun, July 1, 1863.
Canadian Confederation Act went into effect, July 1, 1867.
President Garfield shot, July 2, 1881.
Idaho admitted to the Union, July 3, 1890.
Declaration of Independence adopted, July 4, 1776.
Vicksburg surrendered, July 4, 1863.
Salvation Army founded, July 5, 1865.
Martyrdom of John Huss, July 6, 1415.
Annexation of Hawaii, July 7, 1898.
Duel between Hamilton and Burr, July 11, 1804.
Wyoming admitted to the Union, July 11, 1890.
Adoption of the Ordinance of 1787, July 13, 1787.
District of Columbia established, July 16, 1790.
Charles VII of France crowned at Rheims through the help of Joan of Arc, July 17, 1429.

Last allied offensive of the World War on the Western Front begun, July 18, 1918.
 First Battle of Bull Run, July 21, 1861.
 Discovery of the island of Trinidad by Columbus, July 31, 1498.

JULY, COLUMN OF, a bronze column in Paris on the old site of the Bastille, in commemoration of the citizens who fought for the liberty of France, July 27, 28 and 29, 1830. The column bears the names of the 615 who fell in the revolution, and in the vaults below are the bodies of these victims and also those of the Revolution of 1848. See **BASTILLE**.

JULY REVOLUTION, the name given to the revolution in France in 1830 which placed Louis Philippe on the throne and drove out the restored House of Bourbon. The reactionary policy of Louis XVIII and Charles X had made the Bourbon dynasty exceedingly unpopular, and when, in July, 1830, edicts interfering with the liberty of the press and with the franchise privileges were issued, matters came to a climax at once. The July Revolution extended scarcely beyond Prais, but its influence reached all Europe.

JUMPING BEAN, a name given to the seeds of a number of different plants of the spurge family, because the seeds when laid upon a level surface will move about by jerks and jumps. The motion is caused by a larva or small grub which lives in the seed until ready for its transformation into a moth. The plants and insects are found in Central and South America and to some extent in the Southwestern United States. In the latter section *bronco beans* is a local name for the seeds.

JUMPING MOUSE, an interesting wild mouse, found in the Eastern United States. Its name is derived from the fact that it has long and strong hind legs, like the jerboa (which see), and its movement is by long leaps. It hibernates during the cold months.

JUNCO, *jung'ko*, the popular name of several species of small snow birds, common in winter in parts of the United States and Canada. They are akin to the sparrows and have dark slaty or ash-colored plumage, more or less white on the under side. They spend the summers in Canada and in regions just south of the border, and in winter range as far south as the Gulf of Mexico. They nest on or near the ground, and the nests are hidden by brush. The eggs, from four to five in number, are bluish-white speckled with brown.

JUNE, the sixth month in the year. It consisted originally of twenty-six days, to which it is said Romulus added four, and from which Numa took away one. Julius Caesar again lengthened it to thirty days, and it has ever since remained unaltered.

The origin of the name is a matter of dispute, but the most probable theory is that it was derived from *iuniores*, meaning *younger men*. The month of June was dedicated to the younger men of Rome, and May to the older ones, the *maiores*. The "rare days" of June are praised by the poets, and it is everywhere known as the month of roses, of brides and of graduations. The pearl or the moonstone is the special gem of this month. Its flower is the honeysuckle.

Anniversaries for Celebration. The following birthdays of notable people fall in June:

Ben Jonson, June 1, 1573.
 King George V of England, June 3, 1865.
 Socrates, June 5, 469, B. C.
 Nathan Hale, June 6, 1758.
 Charles Reade, June 8, 1814.
 John Howard Payne, June 9, 1792.
 Charles Kingsley, June 12, 1819.
 Harriet Beecher Stowe, June 14, 1812.
 Edward Grieg, June 15, 1843.
 John Wesley, June 17, 1703.
 Josephine, wife of Napoleon, June 23, 1763.
 Jean Jacques Rousseau, June 28, 1712.
 Peter Paul Rubens, June 29, 1577.

The following important events occurred in June:

Kentucky admitted to the Union, June 1, 1792.
 Tennessee admitted to the Union, June 1, 1796.
 First steamship entered Boston Harbor from England, June 3, 1840.
 Lincoln nominated for President, June 8, 1864.
 Public schools opened in the Philippine Islands, June 11, 1906.
 First Canadian Parliament opened in Ottawa, June 13, 1841.
 Form of the national flag of the United States adopted by Congress, June 14, 1777.
 Arkansas admitted to the Union, June 15, 1836.
 Battle of Bunker Hill June 17, 1775.
 Corner Stone of Bunker Hill Monument laid, June 17, 1825.
 Battle of Waterloo, June 18, 1815.
 Meeting of the first Virginia assembly, June 19, 1619.
 West Virginia admitted to the Union, June 19, 1863.
 Statue of Liberty received from France, June 19, 1885.
 Michigan admitted to the Union, June 20, 1837.

Accession of Queen Victoria, June 20, 1837.
 Purchase of Alaska, June 20, 1867.
 Abdication of Napoleon, June 22, 1815.
 Coronation of George V of England, June 22, 1911.
 Discovery of North American Continent by the Cabots, June 24, 1497.
 First Telegraphic Message passed between New York and Boston, June 27, 1847.
 Coronation of Queen Victoria, June 28, 1837.
 Signing of Magna Charta, June 29 (?), 1215.

JUNEAU, *joo no'*, since 1906 the capital of Alaska, is situated on Gastineau Channel, 110 miles south of Skagway and 100 miles nearly north of Sitka, the former capital. It is in the center of a great mining district and is the largest town in Alaska. It has banks, an electric light plant, newspapers, telegraph and telephone service, and is connected directly with Seattle, San Francisco and other Pacific towns by steamer. Other lines also give it communication with Sitka, Nome and Skagway. It is an important point for miners' supplies, for more than \$70,000,000 in gold have been mined in the vicinity, largely from the famous Treadwell mines. Population, 1930, 4,043.

JUNE'BERRY, a family of plants, embracing about twenty-five species of trees and shrubs. The leaves are simple, and the white flowers grow in abundant clusters. The fruit is a soft, juicy berry, purplish in color and about the size of a pea. It is good to eat. Service berry, shad bush and May cherry are other names by which the plants are known.

JUNE BUG, or **MAY BEETLE**, a small brown beetle common in North America. In May and June the insects swarm at night, frequently entering dwellings, attracted by the light. They are very destructive to young leaves and fruit, upon which they feed. The larvae, which are fat, white grubs, live beneath the surface of the soil and are very harmful to roots, cutting them off from the rest of the plant. They can be destroyed by pouring into the ground a dilute kerosene and soap emulsion. See **BEETLE**.

JUNGFRAU, *yoong'frou*, a mountain of the Swiss Alps, twelve miles southeast of Interlaken. The slenderness of its form and the virgin whiteness of the snow with which it is crowned have given it its name, which means *maiden*. It is one of the most magnificent peaks in Europe, rising in stately majesty to a height of 13,670 feet. It was first ascended in 1811 by two Swiss brothers, but since has been climbed by many tourists. Most visitors make the ascent over a re-

cently-built electric railway, the last six miles of it through a tunnel ending at an underground station, from which elevators rise to the top.

JUNGLE FOWL, one of a genus of birds of which four species are known, living in the East Indies and Northern India. The most common species is much like our domestic fowls, and it is believed that the barnyard poultry have descended from these birds.

JUNIOR HIGH SCHOOL. See **HIGH SCHOOL**, subhead *Junior High School*.

JU'NIPER, a genus of evergreen shrubs and trees of the cone-bearing family, growing in cold and temperate regions of the northern hemisphere. In some species the leaves are long and needlelike; in others, the foliage has the appearance of short, thick branches and is formed of small, overlapping scales. The cones are fleshy and berrylike, and each contains from one to twelve seeds, which require two years to mature. These yield an essential oil, used in medicine, and a flavoring for certain liquors. One species of juniper is the common red cedar of North America, a wood used in cabinet-making and in the manufacture of pencils and cigar boxes.

JUNIUS LETTERS, **THE**, certain letters on public affairs which first appeared in the *Public Advertiser*, a London paper published by Henry S. Woodfall, from which they were copied into most of the other journals of the time. The earliest bears the date January 21, 1769; the last, January 21, 1772. After they were completed they were collected and published by Woodfall, with a dedication to the English nation and a preface by the author. Although so long a time has elapsed since the publication of these papers, their authorship seems as far from being settled as ever. It was evident from the first that the author was fully acquainted with British politics, with the proceedings of both houses of Parliament and with the characters of all the leading statesmen. To this wide information he united a boldness, vehemence and rancor which, combined with his epigrammatic and unsparing invective, rendered him an object of terror to those whom he attacked. Among those suggested as the author were Burke, Viscount Sackville and Sir Philip Francis.

JU'NO, in classical mythology, the wife of Jupiter, the chief Roman deity, and consequently queen of the gods. The Greeks

called her *Hera*. Juno is represented by poets as an exacting and a jealous wife, spending much of her time in devising punishments for Jupiter's mortal wives and their children. Artists pictured her as a beautiful woman of matronly aspect, carrying a staff. Juno was the special protectress of women and of all that concerned marriage and the birth of children. Many temples were erected in her honor, and women appealed to her for aid in every great emergency. She was attended by nymphs and hours, particularly by Iris. The goose, the cuckoo and the peacock were sacred to her. Frequently she is represented as drawn through the air by sacred peacocks, hitched to her chariot.



JUNO

JUPITER, the fifth planet from the sun, the largest planet of the solar system and, excepting the sun, the largest solar body. It is more than three times as large as all the other planets put together, and yet it is not more than $\frac{1}{1000}$ part as large as the sun. Its mean diameter is about 88,000 miles, and the mean distance from the sun 483,000,000 miles. Jupiter rotates on its axis in nine hours and fifty-five minutes, and is accompanied by nine moons. Until 1892 but four were known. The fifth satellite was discovered by Prof. E. E. Barnard, then of the Lick Observatory. A sixth was discovered at the same institution by C. D. Perrine in 1904, and a seventh by the same astronomer in 1905. The eighth was noted in 1908 and the ninth in 1914.

As the inclination of Jupiter's axis is very small, changes in season must be almost unknown. Jupiter is recognized by the naked eye as, next to Venus, the brightest of the planets, and during January, 1908, February, 1909, and so on for several years, a month later each year, was the brilliant evening star, easily located by means of a chart of the heavens.

Jupiter and its satellites, making a miniature solar system, have always been studied

with great interest by astronomers. The surface of the giant planet shows belts of dark and light shade, which are usually, but not always, parallel to each other and undergo quick changes, seeming to merge one into another. These are thought to be masses of clouds, swept about by air currents in an atmosphere much heavier than ours. The moons appear from the earth to move in nearly straight lines from one side of the planet to the other, so that the planes of their orbits are nearly the same as those of Jupiter. They are eclipsed in the shadow of the planet, and their own shadows may be seen passing over the planet's surface. It was by observation of the eclipses of the satellites of Jupiter that Römer discovered that light does not travel instantaneously and computed its velocity. Through a telescope, Jupiter appears like a sphere more flattened at the poles and more bulging at the equator than our earth. It is probable that Jupiter is not a solid body, like Venus and Mars, but is still in a heated and probably partially gaseous state, resembling the sun except that the light given off is slight. See **PLANET**; **SUN**.

It would require over 1,300 bodies like the earth to equal Jupiter's bulk, but only 316 earths to equal it in weight.

JUPITER, or **JOVE**, the greatest of the Roman gods, called Zeus by the Greeks. He was the son of Saturn and Rhea, and in the division of the world by lot, which took place after the overthrow of Saturn, Jupiter received, as his share of the universe, the heavens and the earth, while Neptune received the sea, and Pluto, the lower world.



JUPITER

His first wife Zeus Otricoli, Vatican, Rome. was Metis, the goddess of wisdom, whom to prevent a prophecy that his first child should be wiser than himself, he swallowed. Shortly, after, however, Minerva sprang full armed from his head.

Juno was the chief wife of Jupiter, but he was by no means always faithful to her and was constantly pursued by her jealousy. Besides the goddesses Themis, Ceres, Mnemosyne and Latona, he had many mortal wives, among them Alcmena and Antiope, Danae, Europa, Leda and Io. Among his children were the Fates, the Graces, the Muses, Apollo and Diana, Mars and Hebe and many of the famous Greek heroes. Jupiter was represented in art as a man of middle age and dignified appearance, usually seated on a throne and bearing in his hands his spear and thunderbolts. He was usually accompanied by an eagle, his sacred bird. See MYTHOLOGY, and the gods and goddesses mentioned above.

JURA MOUNTAINS, *shu'rah*, a range on the Swiss-French frontier, extending nearly 200 miles in a general southwest-northeast direction, describing a curve. At its northern end it lies wholly within Switzerland. The mountains are in parallel ridges and are from thirty to sixty miles in breadth, and are composed of sandstone and limestone. Numerous glacial boulders are scattered over the slopes. The summits are covered with snow most of the year; the slopes are clothed with pine forests. The mineral products are gypsum, salt and lithographic stone. The highest peaks are Reculet, Dôle, Mont Tendre and Snowcrest, the last 5,553 feet high. Two French rivers, the Aine and the Doubs, have their source on the western slopes. The Jurassic Period takes its name from this mountain range.

JURAS'SIC PERIOD, a period of geologic time following the Triassic and preceding the Cretaceous periods. It is named from the Jura Mountains in Switzerland, where the rock formations are especially exposed. Jurassic rocks are prominent in Europe, but in North America they are comparatively unimportant. In California and Oregon they constitute some of the gold-bearing rocks, but are so closely related to those of the Triassic that it is impossible in many instances to tell to which system the formations belong. During the period of their formation most of the earth was covered with shallow seas, inhabited by a variety of fishes. It was the age of reptiles, dinosaurs and pterodactyls. The archæopteryx, the gigantic ancestors of birds, also belong to this period. See GEOL-OGY; MESOZOIC ERA.

JURY AND TRIAL BY JURY. The history of trial by jury is not traceable to its origin. It probably began among northern European races, the first known form being found among the Anglo-Saxons, where an accused person could summon twelve neighbors to swear to his innocence.

The Grand Jury. To-day in criminal trials two juries act, the *grand jury* and the *petit jury*. The former may consist of any number more than eleven and less than twenty-four men (usually twenty-three), whose names are drawn by lot from a list of eligible men and who are summoned by the sheriff of the county. Their names are returned in a written report, which is called a *panel*. After the oath has been administered they proceed to consider in private the charge, or *indictment*, which is brought against the accused. If the majority agrees that the accusation has a basis of truth they return a *true bill*. If they find that the accusation is unfounded they *ignore* the bill, and the accused is dismissed.

The Petit Jury. Petit juries consist of twelve persons, and are required in the trial of all criminal offenses and of all issues of fact in civil cases, except when by consent of the parties the decision is entrusted to the presiding judge.

The petit jurors are chosen in the same manner as the grand jurors, but the attorney for either the defendant or the plaintiff in any suit has the right to challenge the right of any one to sit upon the jury for reasons either of prejudice or ignorance, or for other good cause. When once accepted, no juror is at liberty to leave his post without the court's permission. When a prisoner is charged with murder the jurymen are usually allowed to retire only in custody of the sheriff or his deputies, who are sworn to keep them together and not to speak to them with reference to the case.

When the evidence has been given, the presiding judge instructs the jury in the points of law which apply to it, leaving the jury to deal with the facts, and their decision is final. In considering the evidence they withdraw to a private room, and until reaching an agreement, or until it becomes evident that they cannot reach an agreement, no communication is permitted with other persons, even food and other necessities being supplied by officers of the court. If the twelve jurors fail to agree they are discharged by the judge

and the case can be tried anew before a new jury. An *appeal* can be taken from any verdict to a higher court upon showing some legal error in the conduct of the case, or upon the presentation of new important evidence.

The so-called *coroner's jury* is summoned to inquire into cases of sudden or violent death.

Related Articles. Consult the following titles for additional information:

Coroner
Courts

Law
Procedure

JUSTICE, DEPARTMENT OF, one of the executive departments of the government of the United States. Though the office of Attorney-General was organized in 1789, this official did not become a member of the President's Cabinet until 1870. He is fourth in line of succession to the Presidency. The Department has charge of all legal business of the government, the Attorney-General being the chief law officer. It is his duty to advise the president and the secretaries of the departments in all legal matters, to represent the government in court, to direct the district marshals and attorneys of the government, to supervise the penal and reformatory institutions, to administer the national bankruptcy law and, when required, to revise and codify the Federal laws. The salary of the Attorney-General is \$15,000 per year. See UNITED STATES, subhead *Government*; CABINET.

JUSTICE OF THE PEACE, a judicial magistrate of a township, intrusted with the conservation of the peace. In the United States the office is held either by appointment or election, and the incumbent has judicial power in certain petty civil and criminal cases. He can examine offenders, in some states, and hold them to upper courts for trial. In some states he has a right to celebrate marriages. In Great Britain the justice is practically appointed by the lord chancellor and has certain executive as well as judicial functions.

JUSTINIAN I, in full, FLAVIUS ANICIUS JUSTINIANUS (483-565), Byzantine emperor from 527 to 565, was born of an obscure family. On the death of his uncle, Emperor Justin, with whom he had for a time shared the imperial power, he was proclaimed emperor. The early part of his reign was disturbed by party riots and a great part of Constantinople (Byzantium) was burned. He took much interest in its rebuilding, restored the Church of Saint Sophia and was active in building in many other places. Aided by

his generals Belisarius and Narses, he was able—after victories over the Persians, the Ostrogoths in Italy and conquests in Africa—to restore to the Roman Empire a part of its former possessions.

Turning his attention to the laws, Justinian commissioned ten learned civilians to draw up a new code, and the result was the *Corpus Juris Civilis*, (body of civil laws). To obtain money for his projects he oppressed the people with taxes and permitted his servants to commit the most flagrant crimes. His reign of thirty-eight years was a great period in the history of the Empire, but his surname, "the Great," was a misnomer.

JUTE, a fiber obtained from a plant belonging to the same family as the basswood. The jute plant is a native of the warmer parts of India, where it is cultivated, especially in Bengal, on an extensive scale. It is an annual, growing to a height of twelve or fourteen feet. The fiber forms the inner



JUTE PLANT

bark of the plant and possesses in a marked degree the tenacity common to the bark of plants of this order. The fiber is fine and has a shining surface; it is injured by exposure to water and hence is not suitable for

wordage except when mixed with hemp, as it frequently is in the United States and Great Britain, where also it is sometimes mixed with silk in the manufacture of cheap satins. It is chiefly used in the manufacture of coarse bagging, rope, twine, yarn and the foundation of inferior carpets and mats.

In Bengal, the center of the industry, jute has been manufactured on hand looms for centuries. To-day there are numerous jute factories in India that are filled with modern machinery. The United States, in addition to what it produces, uses in a year more than eleven million dollars' worth of imported jute. It is only since about 1830 that the manufacture of jute has risen to importance in Europe. The headquarters of this branch of industry are at Dundee, Scotland. The rice, cotton, sugar, coffee, pepper and other articles of East Indian commerce are almost wholly carried in gunny bags made from jute.

JUTES, a German tribe that assisted the Angles and Saxons in their conquest of England, in the fifth century. See **ANGLO-SAXONS**.

JUTLAND (Danish, *Jylland*), the peninsula and most important portion of Denmark, surrounded on three sides by the sea—the Skagerrak, the Kattegat and the North Sea—and on the south by Schleswig-Holstein; area, 11,412 square miles. The surface is generally low and is diversified by a ridge of hills through the center of the peninsula. The west coast is sandy, and the east coast has many fjords. The inhabitants are considered to be the most genuine specimens of the old Danish stock and have preserved both the language and the manners and customs of early times in their greatest purity. The earlier inhabitants, the Jutes, took part in the expedition of the Saxons to England (see **DENMARK**). Population, 1930, 1,623,362.

JUVENAL, DECIMUS JUNIUS JUVENALIS, a Latin satirical poet, born probably about the middle of the first century A. D. He is said to have been the adopted child of a wealthy freedman; to have been by profession a pleader; to have been the friend of Martial and to have died in Egypt as an exile in charge of a cohort of infantry. Nothing of this is authentic; we know certainly only that he resided in Aquinum about the end of the first century after Christ. His extant works

are sixteen satires, composed in hexameters, giving in powerful language, inspired by a bitter and heartfelt indignation, a somber picture of the corrupt Roman society of that era. His satires have been translated by Gifford and some of them by Dryden, while Johnson's imitations of two of them, entitled respectively *London* and the *Vanity of Human Wishes*, are well known.

JUVENILE COURT. It has long been a recognized fact that it is harmful to children to be brought, some of them for a first and very mild offense, into contact with the careless, often depraved crowd that fills the ordinary police court. The result of this conviction has been the establishing of special courts where juvenile offenders against the law may be tried. Massachusetts was the first state to provide for separate hearing of children's cases, but the first regular juvenile court was opened in Chicago in July, 1899. Two years later the juvenile court of Denver was established under the jurisdiction of Judge Benjamin B. Lindsey. Subsequently all of the states authorized similar courts or altered the procedure of existing courts so that special care might be given to juvenile offenders.

One convincing proof of the need for these measures is the fact that over one-half of the habitual criminals begin their lawless career before 21 years of age. The earliest plans were limited to separate confinement of juvenile prisoners, wherever possible in reformatories. Probation has also been widely adopted by the juvenile courts, as fines and imprisonment were discarded, because theories of revenge and of deterring other persons from crime seemed groundless.

The judge is often assisted by a psychologist and a social worker. Their duties include the mental and physical examination of the delinquent, a study of his home and associates, his school experiences and leisure-time activities. The court becomes a guide and counselor for the child or youth and seeks to organize his life on a socially healthful basis.

The age limit of those tried in juvenile courts varies in different states, but is never over twenty.

See also **CHILDREN, SOCIETIES FOR; CHILD STUDY; CHILD TRAINING**.



K, the eleventh letter of the English alphabet, derived in its form from the Phoenician character, which resembled a reversed *k*. In Anglo-Saxon this letter was little used, *c* being regularly substituted for it. Gradually, however, it came to replace *c* in positions where the latter would be ambiguous in sound. It has but the one sound, and it is silent before *n*, as in *knot*. In words of one syllable *k* is often used after *c* as a final letter, to secure the proper pronunciation of derived forms, as in *crack*, *cracked*.

KAABA, or **CAABA**, *kah'ba*, a cube-shaped stone building in the court of the mosque at Mecca, held sacred by Mohammedans. It is about forty feet long, thirty-three feet wide and fifty feet high. In one corner of it, built into the wall, is the famous Black Stone, held in extreme veneration by Mohammedans. Legend says the stone (probably of meteoric origin) was once white, but has been blackened by the millions of kisses imprinted upon it by devout pilgrims. The Mohammedan, in whatever part of the world he may be, turns his face toward the shrine in prayer.

KABUL, or **CABUL**, *ka bool'*, the capital of Afghanistan, on the Kabul River, at an elevation of 6,400 feet above the sea. It has no remarkable buildings except the citadel and the palace. All the city's foreign trade is with India, through the celebrated Kyber Pass. Three times within a hundred years the city has been held by the British, to enforce treaty rights. Population, 80,000.

KADIAK, *kad yak'* or **KODIAK**, *kohd yak'*, the largest island of Alaska, 36,000 square miles in area, situated off Cook Inlet, on the southern shore. It is notable for salmon fisheries and for the Kadiak bear, the largest bear in the world. The natives live mostly in the three villages of Karluk, Kadiak and Akhiok; these together have

about 1,000 people. There is some agriculture and cattle raising, for the climate is temperate.

KAFFIR CORN, or **KAFIR CORN**, *kah'fer*, or *kaf'ir*, a cereal grain belonging to the sorghum group, used chiefly as a food for live stock. It contains a high percentage of starch, but is lacking in saccharine. Kafir corn is raised in large quantities in the western part of the United States, especially in the dry-farming sections. It is so called because the seed was first brought from Kaffraria, in Africa.

KAFFIRS, or **KAFIRS**, several tribes of negroes, belonging to the Bantu family inhabiting Southeastern Africa. They possess most of the characteristics common to the negro—brown skins, thick, coarse woolly hair, thick lips and flat noses, but the shape of the head resembles that of the European, and they are mentally superior to other natives of the race; their religious conceptions are on a higher plane and their practical thinking is superior. They are cattle-breeders and agriculturists, raising millet, maize, yams, melons and vegetables. Except when fighting, they are vegetarians. They are governed by a hereditary chieftain with absolute power. The women are drudges, and the men are warriors, fighting with knobkerriers, clubs and assegais (lances for hurling) behind ox-hide shields.

KAISER, *ki'zer*, the Teutonic equivalent for *emperor*, was the title popularly applied to the reigning monarchs of the German Empire and Austria-Hungary until November, 1918. The last of the German House of Hohenzollern was William II; the last of the Austrian Hapsburgs was Charles (Karl) I. Their disappearance from power occurred when the central empires capitulated to the entente nations at the close of the World War.

The name *kaiser* is from *Caesar*, and became current in medieval times when the Teutonic emperors attached Caesar to their names as a mark of imperialism.

KAISER-BLUME, the German name for the cornflower, and the national flower of Germany. See CORNFLOWER.

KAISER WILHELM CANAL. See KIEL CANAL.

KALAHARI, *kah lah hah're*, **DESERT**, an arid plain in the southern part of Africa, extending from the Orange River to Lake Ngami and occupying most of Bechuanaland and part of what was formerly German Southwest Africa. Although this region has no water except shallow salt lakes, it is covered in part by grass, bushes and shrubby trees, and is roamed by herds of antelopes and other wild animals. The natives, who are Bushmen and Bakalahari, raise water-melons and vegetables.

KALAMAZOO, *MICH.*, ninth city in size in the state, the county seat of Kalamazoo County, fifty miles south of Grand Rapids, on the Kalamazoo River and on the New York Central, the Grand Trunk, and the Chicago, Kalamazoo & Saginaw railroads. The city is in an agricultural district where celery is a celebrated product. Kalamazoo College, Barbour Hall, and the Western State Normal School are located here. Important structures are the Michigan Asylum for the Insane, a city hall, a post office, a public library, hospitals and sanitariums and a Y. M. C. A. The manufactures include paper, wagons, buggies, windmills, engines, machinery, undertakers' supplies and various articles for women's wear. In 1918 Kalamazoo adopted what is claimed to be the most progressive form of city government in America, embodying both the commission form and the city manager. There is an airport of 310 acres. The place was settled by the Titus brothers in 1829 and was chartered as a city in 1884. Population, census of 1930, 54,786.

KALB, JOHANN DE. See DEKALB, JOHANN.

KALEIDOSCOPE, *ka l' dōh skope*, an optical instrument invented by Sir David Brewster. It consists of a tube, inside of which are three long, narrow mirrors, hinged together lengthwise. In one end is an eyeglass, in the other two glass discs, between which are placed small pieces of colored glass. These bits looked at from the opposite end of

the tube appear more numerous than they are, and, owing to the reflection, they form symmetrical patterns. A slight shaking of the instrument alters the design. The kaleidoscope is not only a fascinating toy for children, but an aid to designers of fabric patterns and of wall papers.

KAL'ENDS, or **CAL'ENDS**, in the Roman calendar the first day of the month. The name refers to the custom of the college of priests of assembling the people on the first day of the month. At that time announcements of festivals were made. The Latin word for *assemble* is *calare*. A Roman writer who wished to mention the date January 31 would call it *the day before the Kalends of February*. See CALENDAR.

KALEVALA, *kah le vah'lah*, a Finnish epic poem of ancient origin, for centuries handed down from one generation to another by word of mouth. In 1835 Elias Lönnrot, son of a village tailor in Finland, signed his name to the introduction to "Kalevala, or the Old Karelian Poems of the Ancient Times of the Finnish People." It was not until 1849 that he published a complete edition. He secured his material while going his rounds as a country doctor, listening to old folks' recitals of their ancient legends and songs. The *Kalevala* began at once to quicken the consciousness and spirit of the Finnish people, and to enrich the national speech; poets, painters, and musicians found inspiration in its stirring episodes. Longfellow employed its style in writing the great poem *Hiawatha*.

KAL'MIA, a genus of North American shrubs, which bear cup-shaped rose or purple flowers in clusters. The kalmias belong to the heath family and are known commonly in the United States as laurel. The *mountain laurel*, or *calico bush*, has been carried from its home in the Alleghany Mountains to Europe, where it is a favorite garden shrub. The flowers of the kalmia have a peculiar arrangement for fertilizing themselves. When the flower opens, the stamens are bent back away from the pistil and are held in little pockets in the corolla. Whenever an insect touches them they fly loose, scattering the pollen from little holes in the tops of the anthers. Some of the pollen falls upon the insect and is by him carried to the stigmas of other flowers, and in this way cross fertilization is secured. For interesting details, see CROSS FERTILIZATION.

Under favorable conditions the trunk of the mountain laurel attains a diameter of three inches, and as the wood is hard like box, it is used by turners for small objects, such as handles to tools. All laurel is more or less poisonous if eaten. Sheep are sometimes poisoned by eating a species of *kalmia* variously called *sheep laurel*, *lamb kill* and *staggerbush*.

KAL'MUCKS or **CALMUCKS**, a wandering, warlike Mongol race inhabiting Kalmuck, an autonomous area on the right bank of the Volga, and other districts in Siberia and Mongolia. They are bold soldiers and splendid horsemen but their chief occupation is stock-raising; small numbers live in villages. The Russian Kalmucks have been grievously injured by war, famine and migrations; more than half of their wealth has been destroyed; they are diminishing in numbers. The most of them are Buddhists, but some of them have been Christianized. Physically they are small of stature, broad-shouldered, with small, round heads and narrow, oblique eyes.

KALSOMINE. See **CALCIMINE**.

KAMCHATKA, *kam chat'ka*, a province of the Socialist Federal Soviet Republic that includes the peninsula of Kamchatka and the adjacent mainland reaching within the Arctic Circle in northeastern Siberia. The peninsula lies between the Sea of Okhotsk and the Bering Sea. It is about 750 miles long and varies in width from 80 to 300 miles; the area is about 104,000 square miles. The climate is severe. The population relies on hunting fur-bearing animals, on fishing and the raising of reindeer. The Kamtchadales are a branch of the Mongol family; large numbers of Russian exiles and refugees, as well as Koreans, Chinese, and particularly Japanese, have settled in the country. Population, over 20,000.

KAMERUN, *kah mah roon'*, or **CAMEROON**, a territory in West Africa occupied by France and Great Britain. The British Cameroons includes an area of 34,236 square miles along the western border of Nigeria with a population of about 774,000.

The coast region has a fertile soil and produces palm oil, cocoa, rubber and bananas. European business men own a number of plantations. Imports and exports require the services of about 200 vessels yearly; they call at the ports of Victoria and Tiko. Political affairs are managed by the government of Nigeria, under the mandate of 1922.

The district allotted to France contains 166,489 square miles with a population of about 2,000,000. The chief products are ivory, cacao, timber, hides, almonds, cola nuts and palm oil. About 550 ships call each year at the ports of Doula and Kibri. There are 292 miles of railways and 3,000 miles of overland roads. The 90 government schools have an attendance of over 6,000 and a yet larger number of pupils attend private schools. The government is autonomous under French control. Germany lost the whole region during the World War.

KAM'LOOPS, **BRITISH COLUMBIA**, in the Yale District, is situated at the junction of the North and South Thompson rivers, 250 miles from Vancouver. It is on the Canadian Pacific Railway, of which it is a divisional point, and it is also a divisional point on the Canadian National. The surrounding region is devoted to stock raising, mixed farming, fruit growing, lumbering and mining. In the town the leading industries are saw mills, sash and door factories, machine shops, a brick yard, a brewery and a cigar factory. The town is noted for its dry and healthful climate. Population, 1931, 6,167.

KANAKAS, *ka nah'kas*, a name given by white sailors and traders to the natives of the Hawaiian Islands. The term is now used colloquially to designate Polynesians generally, but is rarely used in the Pacific islands.

KANAWHA, *ka naw'wah*, a river of West Virginia, the headstream of which rises between the Blue Ridge and Iron Mountains in North Carolina. It flows in a northeasterly direction, as the New River, through the western part of Virginia, and then, flowing to the northwest, traverses several ridges of the Alleghanies. In Fayette County, W. Va., the river is joined by the Gauley. From this point the main stream, under the name Kanawha, follows a course of 100 miles to the Ohio River, at Point Pleasant. The total length of the headstream and main river is 400 miles. The Kanawha is an important commercial waterway of West Virginia.

KANDAHAR', or **CANDAHAR'**, **AFGHANISTAN**, a town of considerable commercial importance in the southern part of the country, on the direct route to India, 210 miles southwest of Kabul. It lies 3,484 feet above the sea, and has a large transit trade in silk and felt, chiefly carried on with British India. The town is said to have been founded by

Alexander the Great. Population, estimated, 31,500.

KANE, ELISHA KENT (1820-1857), an American surgeon, traveler and Arctic explorer. In 1850 he joined the Grinnell Arctic Expedition, as medical and scientific member, in the unsuccessful search for Sir John Franklin. His observations led him to the belief that there was a large open sea near the pole, and on his return he organized a second Arctic expedition. He left New York in the *Advance* in May, 1853. At 78° 43' north latitude he was frozen in for twenty-one months. Finally, he was obliged to abandon the vessel. A perilous journey of 1,300 miles in boats and sledges brought him back to Greenland, and he reached New York, in November, 1855. Much broken in health, he sailed for Cuba to recuperate, but died there. (See NORTH POLAR EXPLORATION.)

KANGAROO', one of the most strangely-formed animals in the world, found in a wild state only in Australia and nearby islands. The most noticeable feature about



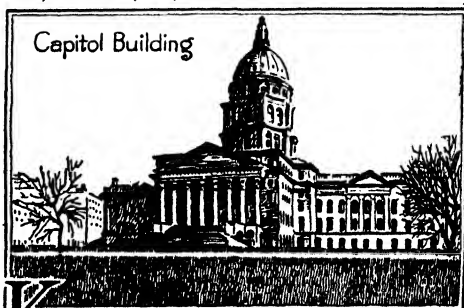
KANGAROO

the kangaroo is the disproportion between the upper and lower parts of the body. The head is small and deerlike in shape, with large ears; the fore legs are small, and the hind legs are relatively large and powerful. The tail is long and thick at the base and helps to support the animal when it sits erect, and to assist it in its long leaps. When moving at an ordinary rate, the kangaroo jumps about its own length, but when frightened it can leap from three to four times that far. Kangaroos are among the most ludicrous of all animals, and are objects of great interest in a "zoo."

The young are born very immature, being in most instances less than an inch long, and are protected and nourished for about eight

months in a pouch on the mother's abdomen. Kangaroos live entirely upon vegetable growths, and where still plentiful, they are a serious pest to farmers. They are very timid, but are alert in time of danger. The kangaroos include many species, varying in size from that of a hare to that of a large sheep, and remains of still larger extinct species have been found in Australia. The larger and more common kinds belong to a genus including the *giant kangaroo*, the *gray kangaroo* and the *brush kangaroo*. The kangaroos can kill a dog with a blow of the hind foot. The animals are hunted for their hides, which make excellent leather, and also for their flesh. Smaller species include the *tree kangaroos* and the *wallabies*.

KANKAKEE', ILL., the county seat of Kankakee County, on the Kankakee River and on the Illinois Central, the Cleveland, Cincinnati, Chicago & Saint Louis and the Chicago, Indiana & Southern railroads. The most important manufacturers are plows, pianos, iron beds, mattresses, cigars, hosiery and wagons. There are also extensive limestone quarries and brick and tile yards in the vicinity. It is the seat of the Eastern Illinois Hospital for the Insane, which is the home of 3,000 insane persons. Other fine buildings are the Arcade, the county jail, the opera house, the public library, a conservatory of music and the Y. M. C. A. building. Saint Viateur's College, a prominent Roman Catholic divinity school, is located at Bourbonnais Grove, a suburb three miles distant. There are two important pleasure resorts on the river, Electric and Riverview parks. Kankakee was settled in 1853 and was incorporated the next year. Population, 1920, 16,721; in 1930, 20,620.



KANSAS, the thirty-fourth state to be admitted to the American Union, lies exactly in the geographical center of the United

States. Only twelve states are larger, and but twenty-three contain more people. Kansas is among the most progressive states. The state debt of twenty-two and one half million dollars was incurred entirely by the issue of soldier's compensation bonds. It was first peopled by pioneers who reached the territory in "prairie schooners"—wagons with canvas covers—and was contested ground on the slavery question, for its admission as a state occurred on January 29, 1861, just as the clouds of the great Civil War were gathering.

The area of Kansas is 82,158 square miles, which is more than twice that of Ohio. The Federal census of 1930 gave the state a population of 1,880,999, an increase of 111,742 or 6.3% over the census figures for 1920. The average number of people per square mile was 23 as compared with 41.3 for the entire United States. With the exception of the northeast corner, where the boundary is formed by the Missouri River, the state is a rectangle. Its length from east to west is 402 miles; its width from north to south is 207 miles. It is popularly known as the **SUN-FLOWER STATE**, from its choice of state flower.

Surface and Drainage. The state occupies a portion of the great plain lying between the Rocky Mountains and the Mississippi River. As a whole it is an undulating prairie, rising on an average of about seven feet per mile from the eastern to the western boundary. The average altitude of the eastern boundary is about 800 feet, and that of the western boundary is about 3,500 feet. The highest point is in Sherman County, on the extreme western boundary, and is over 4,400 feet in altitude. In general, the surface is characterized by low swells, separated by shallow valleys. Here and there are hills rising above this plain to the height of 400 or 500 feet and giving some variety to the scenery. The banks of streams in the eastern portion are frequently characterized by bluffs on one side or the other, varying in altitude from 100 to 200 feet; but the streams in the western section flow through shallow valleys and have low banks.

The Missouri drains the northeastern portion. The Kansas and its tributaries flowing eastward drain all of the northern half; the Arkansas, flowing eastward through a little more than half of the state and then bending southward; the Neosho and Verdigris, flowing east of south, and the Osage, flowing east, drain the remainder. Among the important

tributaries of the Kansas River are the Republican, the Smoky Hill and the Solomon. The Verdigris flows into the Arkansas. The Missouri is navigable, but in general the streams are shallow and have but little fall, though a few have sufficient fall to afford some water power.

Climate. Kansas has a temperate climate; it is mild, without tropic heat or arctic cold, and everywhere is healthful. The atmosphere is clear and dry, and throughout the year there is a predominance of sunny days. The winters are short and mild, and but little snow falls. The mean annual temperature in the northern part of the state is about 50° and in the south about 55°. However, cold storms sometimes occur, accompanied with temperatures running from 0° to -25°. The average rainfall for the entire state is about twenty-seven inches, but it is much heavier in the eastern third than elsewhere. Here it averages from forty to forty-four inches. In the central third of the state it is about twenty-five inches, and in the western third it is from ten to fifteen inches.

Mineral Resources. The southern counties contain extensive deposits of bituminous coal, which are worked in many places and yield a sufficient quantity of coal for local purposes (over 3,000,000 tons a year). There are also in this vicinity deposits of lead ore and of zinc, the latter being extensively mined. To the northwest of the zinc and lead deposits is an extensive field of natural gas, and a little to the north and west of this are great deposits of petroleum, yielding about 40,000,000 barrels per year. The gas and oil territory has been greatly extended in recent years. Gypsum, limestone, chalk and large deposits of salt, clay and other minerals are scattered through the state, and in many localities appear in unlimited workable quantities. In output of salt Kansas ranks high among the states.

Agriculture. Agriculture is the chief industry of the state. The soil is fertile, and the climate is well suited to the growing of all products that can be raised in a temperate climate. The only drawback to agriculture is the lack of rain in the western third of the state; however, the annual rainfall of this district is noticeably increasing. In the eastern third the chief crops are corn, oats, rye, potatoes, sorghum, broom corn, hay, hemp, flax and fruit.

The central portion of the state is devoted

to raising winter wheat, and in the production of this variety of wheat, Kansas leads the other states of the Union. As a wheat-producing state Kansas is first, producing 15% of the nation's wheat crop. In this region are also found many thriving fruit orchards. Alfalfa is quite generally raised throughout the state, its total area being about 1,000,000 acres. The western third of the state is generally devoted to the raising of live stock, for which it is abundantly suited, since the mild winters allow stock to remain without shelter. The upper Arkansas Valley, in the western section, has considerable sugar-beet culture, principally in Finney and Kearny counties. Large numbers of cattle, horses and sheep are marketed every year, and the wool clip is large. Kansas has made valuable contributions to the breeding of wheat, corn, oats, barley and sorghum. Advances have been made by introducing new species or varieties, by selection among plants produced and by crossing strains. Students have come from South Africa, India, Bulgaria, China and Argentina to observe these experiments at Kansas State College.

Manufactures. Compared with agriculture, manufacturing is of minor importance. The leading industries, in the order of their value, are slaughtering and meat-packing, with their chief center in Kansas City, Kansas; the manufacture of soap, butter, cheese and condensed milk; building and repairing cars and other rolling stock for railroads; the manufacture of flour and other grist-mill products, beet sugar, foundry and machine shop products.

Transportation. The eastern and central portions are well supplied with railway lines, and a number of trunk lines extend through the state from east to west, but in the western third there are few cross lines connecting these, so some portions of this part of the state (two counties, Stanton and Grant) are without railway communication. There are about 10,000 miles of railroad.

Government. The legislature is composed of a senate, restricted to forty members, and a house of representatives, restricted to 125 members. The senators are elected for four years, and the representatives for two years. The legislature meets biennially, and the members cannot draw pay beyond fifty days for attendance.

The executive department consists of a governor, a lieutenant-governor, a secretary

of state, an auditor, a treasurer, a superintendent of public instruction, an attorney-general, a bureau of labor and industry, a superintendent of insurance and the state printer, each elected for two years. There are also several administrative boards, whose officers are appointed by the governor, such as Boards of Agriculture, Health, Administration and Regents and the following Commissions: Corporations, Labor and Industry, Tax, Highways and Vehicles.

The judiciary department is vested in a supreme court consisting of seven judges, elected for six years, and 59 district judges, elected for four years, who preside over the courts in their respective districts. Each county has a probate judge, who is also judge of the juvenile court, and large cities have city courts. Townships, villages and cities have justice courts for petty cases.

Education. The widely-scattered rural population in the western part of the state is adopting the consolidated country school plan. The school fund is derived from the sale of school lands, two sections in each township, and is supplemented by local taxation. The public schools are under the supervision of the superintendent of public instruction, and those in each county are under a county superintendent. Cities of the first and second class are each under a city superintendent employed by the board of education of the city. The state university at Lawrence is at the head of the public school system. There are state teachers' colleges at Emporia, Pittsburg and Hays. Graduates of schools of collegiate rank, accredited by the state board of education, are granted three-years' state certificates. The state agricultural college and experiment station are at Manhattan, with an extensive branch of the station at Hays. The city of Wichita maintains a Municipal University. There are numerous colleges and secondary schools maintained by religious denominations. Among those worthy of mention are Baker University at Baldwin (Methodist Episcopal), Friends University at Wichita, Southwestern College at Winfield (Methodist Episcopal), Ottawa University at Ottawa (Baptist), College of Emporia at Emporia, Marymount College at Salina, Bethany College at Lindsborg, McPherson College at McPherson, Kansas Wesleyan University at Salina and Washburn College at Topeka. Haskell Institute at Lawrence is the largest Indian School in the United States.

Institutions. The school for the deaf and dumb is at Olathe and that for the blind is at Kansas City. There is a state orphans' home at Atchison and a national soldiers' home at Leavenworth. The state soldiers' home is at Dodge City. The state penitentiary is at Lansing; the industrial reformatory for young men is at Hutchinson. A great Federal prison is near Leavenworth. The state also maintains an industrial school for girls at Beloit and an industrial reform school for boys at Topeka. There are hospitals for the insane at Topeka, Osawatomie and Larned, a tuberculosis sanitarium at Norton and a farm colony for women delinquents at Lansing.

Cities. There were twenty cities in Kansas in 1930 each with over 10,000 population. Kansas City was the largest of these; the next five, in order of size, were Wichita, Topeka, Hutchinson, Salina and Pittsburg. Each prominent city is described in these volumes.

History. Kansas was first visited by Spaniards under Coronado about 1541, but it was not again explored until the eighteenth century, when Frenchmen passed through it. It came into possession of the United States in 1803 as part of the Louisiana Purchase. Lewis and Clarke passed up the Missouri River, on the northeastern border of the state, and Pike passed through the territory in 1805. Fort Leavenworth was established by the government in 1827. It was a part of the territory of Missouri in 1821, but from that time until 1854 it was an unorganized territory. In that year occurred the great contest over organization, precipitated by the Kansas-Nebraska Bill. Several attempts to form constitutions and elect legislatures were made, and a lively contest ensued between immigrants from the South and from the North to gain control of the state. A pro-slavery party gained the first success in 1855, but in October of the same year a convention of free-state men met at Topeka and adopted a constitution prohibiting slavery. An election was held under this instrument in January, 1856, and a free-state governor was chosen, the pro-slavery party taking no part in the election.

In 1856 occurred the famous raid of John Brown at Pottawatomie Creek. With the aid of Federal troops the free-state legislature was prevented from meeting, but a constitution adopted by the pro-slavery party

Items of Interest on Kansas.

The lowest point in the state is in the southeastern part, in Montgomery County, only 725 feet above sea level; the west central portion has noticeable irregularities of surface, and the northwestern part is distinctly hilly.

An unusually great variety of birds is found in the state, nearly 350 being known to breed there or pass through in their migrations.

The fruit product of Kansas is not as yet large when compared with that of other states, but apples, pears, peaches, plums, grapes, cherries and many smaller fruits grow well in almost all sections.

The manufactured products are yearly increasing in value; the most important industry is slaughtering and meat packing, in which Kansas ranks second only to Illinois.

The flour and grist-mill industry ranks second in importance, with an annual product valued at \$70,000,000; one-fourth of the wheat crop is handled by the mills of the state.

Questions on Kansas

What is the shape of Kansas?

What is its area? How does it rank in size among the other states?

How many acres has the United States government reserved for forestation?

What per cent of the area is included in farms?

What are the three leading crops? How does the state rank as a producer of each?

What fruits are raised?

What is the annual value of all crops?

How does Kansas rank as a producer of natural gas? Of salt?

What are the two most important manufacturing industries?

Name five of the largest cities and tell why they are important.

How does Kansas rank among the states in corn production?

What state raises more wheat than Kansas?

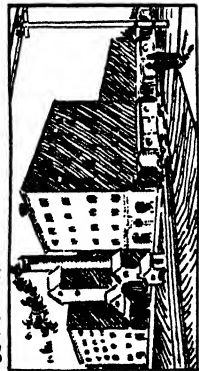
KANSAS

THE SUNFLOWER STATE



SUNFLOWER

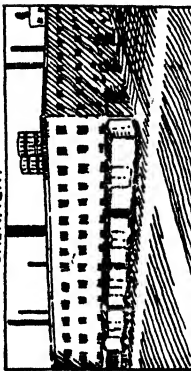
WHEAT



FLOURING MILL



CREAMERY



PACKING PLANT



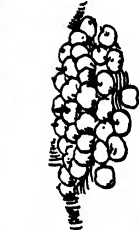
COAL MINE



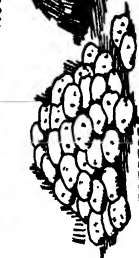
WATERMELONS



GRAPES



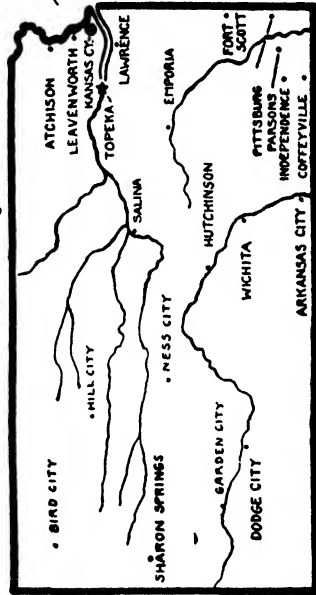
APPLES



POTATOES



HAY



CORN



HOGS



HORSES

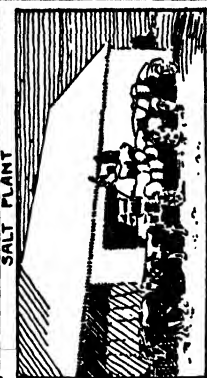
KATIA CORN



SHEEP



PETROLEUM



SALT PLANT

WOOLEN MILLS

WHEAT

SUNFLOWER

at Lecompton, in November, 1857, was voted down. The immigration from free states thereafter became so preponderant that a constitution, adopted in 1859, prohibiting slavery, was finally ratified, and the state was admitted to the Union in 1861.

Legislators in Kansas have taken several progressive steps. They early adopted a constitutional amendment on prohibition; they opposed railway and other trusts; they outlawed the sale of fraudulent stocks by corporations established in other states; they provided for the city manager plan and for women suffrage; juvenile courts have been set up in all of the counties; a mothers' pension law was passed, and a welfare board established.

Legislation has also dealt with bus and truck transport, banking, withdrawals from building and loans associations, sale of drugs by vending machines, insurance, redemption period on mortgaged property, reduction of tax rate, abolition of the poll tax, transportation of gasoline, housing problems, and possession of machine guns. A state board has been given charge of all penal and charitable institutions of the state. The Board of Regents controls all state educational institutions. A double plan of election boards was adopted whereby one board receives the ballots and another board counts them.

Related Articles. Consult the following titles for additional information:

GEOGRAPHY

Atchison	Independence	Parsons
Chanute	Iola	Pittsburg
Coffeyville	Kansas (river)	Missouri River
Emporia	Kansas City	Salina
Fort Scott	Lawrence	Topeka
Hutchinson	Leavenworth	Wichita

HISTORY

Brown, John	Lecompton
Coronado, F.	Constitution
Kansas-Nebraska Bill	Louisiana Purchase
	Missouri Compromise

KANSAS, UNIVERSITY OF, a state institution established by act of the legislature at Lawrence in 1864. It was opened in 1866 and since that date has developed into a strong and influential institution. The student enrolment is over 5,000. The full-time faculty members 250. The libraries contain about 360,000 volumes. The university consists of a graduate school, a college of liberal arts; schools of fine arts, law, pharmacy, medicine and education, a summer session, a division of university extension and a division of state service. It also cooperates with the public utilities commission and the state board of health.

KANSAS CITY, KAN., the largest city of the state and the county seat of Wyandotte County. It is situated on both sides of the Kansas River at its junction with the Missouri. It is separated from Kansas City, Missouri, by the state line. The following railroads enter the city: the Missouri Pacific; Atchison, Topeka & Santa Fe; Union Pacific; Chicago Great Western; Chicago, Rock Island & Pacific; Kansas City Southern, Missouri-Kansas-Texas, Kansas & Missouri, Kansas City, Kaw Valley & Western. Fairfax Airport is three miles north of the city.

This is an industrial center that produces 44 per cent of the state's manufactured products. It has ranked among the highest in meat packing and flour-milling. Its grain elevators have a capacity of 28,000,000 bushels. Other leading industries are soap, structural steel and American walnut lumber; the railroad repair shops are important. The value of the total annual production amounts to about \$314,000,000. More than 60 per cent of the homes are owned by the residents. Kansas City has enjoyed a steady growth since its consolidation in 1886. The population in 1920 was 101,177; in 1930, 121,857.

KANSAS CITY, MO., a flourishing industrial city of the Middle West, forming with Kansas City, Kan., the second largest livestock center in the United States. It is the second city in the state in size, Saint Louis being larger, and is situated on the western border, in Jackson County, at the junction of the Kansas and Missouri rivers. Kansas City, Kan., adjoins it on the west, the two being separated by the state line. Kansas City is 280 miles west of Saint Louis and 458 miles southwest of Chicago. It is an important railroad center, and is served by twelve trunk lines, including the Atchison, Topeka & Santa Fé, the Chicago, Burlington & Quincy, the Chicago & Alton, the Chicago Milwaukee, Saint Paul & Pacific, the Chicago Great Western, the Missouri-Kansas-Texas, the Union Pacific, the Wabash, the Chicago, Rock Island & Pacific, the Missouri Pacific and the Saint Louis & San Francisco. The city is nineteenth in size among the cities of the Union. Population, 1920, 324,410; in 1930, 399,746.

Parks and Boulevards. The site of the city is one of unusual beauty, for it is built on picturesque hills that rise high above the river level. Along the river are found the wholesale and factory districts; above this

section are the office buildings and retail stores, and beyond are the residential districts. The bluffs have been greatly beautified by landscape treatment and the construction of splendid parks and boulevards, about 110 miles in length, which connect the various parks. Swope Park, with its 1,380 acres is the largest park. Cliff Drive, Kersey Coates Drive, Ward Parkway and Meyer Boulevard are famous avenues.

Buildings and Institutions. The larger buildings of the city include the Union Station, board of Trade, the Municipal Auditorium, Live Stock Exchange, Post Office, Federal Reserve Bank Building, American Royal Live Stock and Horse Show, Liberty Memorial, William Rockhill Nelson Gallery of Art and the Atkins Museum. There are more than 130 public schools and a large number of professional schools, including a teachers college, colleges of dentistry, pharmacy, osteopathy and music. Also there are the Art Institute and the public library.

Commerce and Industry. The two municipalities named Kansas City form one great livestock and meat-packing center, and in these enterprises they are surpassed only by Chicago. Kansas City, Mo., is the largest winter-wheat market in the country, and the third largest primary grain market. Its grain elevators have a total capacity in excess of 60,000,000 bushels, and it is the distributing center of the rich farming districts to the west and southwest.

History. Wyandotte Indians who moved from Ohio formerly owned the site of the city. The Indian burial ground, located in the heart of the city, is still maintained according to an agreement made with the Indians, when the Government bought the land from them. The settlement at this site was also an important post used by Lewis and Clark on their expedition. Settlements and camps were established in 1800, 1821, 1825 and 1830; all of them were contributory to the establishment of a city. Kansas City, which developed from a pioneer fur-trading station, was marked out as a town in 1838 on a tract of 250 acres but the project failed. In 1846 the sale of lots was accomplished and a town of 600 people soon grew up. In 1850 it was incorporated as the Town of Kansas; in 1857 it was changed to City of Kansas, the present name being adopted in 1889.

KANSAS-NEBRASKA BILL, a bill passed by the Congress of the United States

in 1854 separating and organizing the territories of Kansas and Nebraska. It was introduced by Stephen A. Douglas. It was chiefly important as embodying the "squatter sovereignty" idea of Douglas, that is, as expressed by the bill, that "all questions pertaining to slavery in the territories and the new states to be formed therefrom, are to be left to the decision of the people residing therein, by their appropriate representatives." This provision would have overridden the Missouri Compromise, which prohibited slavery north of the latitude of 36° 30'.

The original bill was superseded by another prepared by Douglas, which distinctly repealed the slavery clause of the Missouri Compromise. The bill passed the Senate against the opposition of Sumner, Chase, Everett, Seward and others, and it passed the House after a long and bitter struggle. It revived the bitter slavery contest which had been allayed by the Compromise of 1850, for it practically opened to slavery an area of 500,000 square miles, including the present states of Kansas, Nebraska, Montana, North Dakota, South Dakota, Wyoming and part of Colorado. Thus it had the effect of hastening the Civil War.

KANSAS RIVER, a river of Kansas, formed by the junction of the Republican and the Smoky Hill (the latter rising in the Rocky Mountains). It traverses the state in an easterly direction and falls into the Missouri at Kansas City. It is 250 miles long and is not important for navigation. Topeka, Lawrence and Junction City are among the cities on its banks.

KANT, *kahnt*, IMMANUEL (1724-1804), a celebrated German philosopher, born at Königsberg, Prussia. He was educated at the University of Königsberg, where he supported himself as a private tutor and later served as a lecturer until 1770, when he became professor of logic and metaphysics, a position which he held until old age. Kant's personal appearance and manner of living gave no suggestion of the strength of his influence. He was small of stature, being scarcely more than five feet tall, and lived a most methodical, unpretentious life. Although he was deeply interested in travels and in descriptions of the characteristics and customs of foreign nations, it is said that he was never outside the borders of the province in which he was born.

Kant attempted to reconcile the conflicting philosophical systems which had dominated the seventeenth and eighteenth centuries. In doing this, he constructed a new system. His chief work, *The Critique of Pure Reason*, contains a complete exposition of his philosophy, and through it and other writings he exerted a more potent influence upon thought than any other man of his time. His other important works are *The Critique of Practical Reason* and *The Critique of the Power of Judgment*.

KAOLIN, *ka'ol'in*, a white clay consisting of decomposed feldspar and containing silica, alumina and small quantities of lime and soda potash. The name is that of a hill in China where it was first found. The Chinese use kaolin in making the porcelain and pottery for which they are famous.

Similar clays, differing slightly in color and in the percentage of constituents, are found at Schneeberg in Saxony, furnishing the material of Dresden china; at Limoges, in France, employed for Limoges ware, and at Saint Austell, in Cornwall, the source of supply for the British potteries. In the United States kaolin is found in Nebraska, North Carolina, Delaware, Georgia, Pennsylvania, Connecticut and Vermont, but the best quality is obtained from Cornwall, England. In its natural state kaolin somewhat resembles mortar; by sorting and repeated filtration it is freed from all coarse ingredients, then dried in pans and sheds and sent into the market cut into blocks. When burned it becomes pure white. See POTTERY; CLAY.

KARAKORUM, *kah rah ko'rum*, **MOUNTAINS**, a mountain range in Central Asia, forming a sort of rampart between Kashmir and Eastern Turkestan. Mount Godwin-Austen, 28,278 feet in height, is, after Mount Everest, the highest mountain in the world. The range has a high average elevation, and rises from one of the loftiest tablelands in the world.

KARLSBAD, a German health and fashion resort. See CARLSBAD.

KARLSRUHE. See CARLSRUHE.

KARNAK, *kahr'nak*. See THEBES.

KASHGAR, *kahsh gahr'*, **TURKESTAN**, a city on a river of the same name and at the junction of roads to Pekin, India and Russia. It is very old, dating from 76 B. C. It has a mixed population, estimated to be from 60,000 to 70,000 and is under Chinese rule. Except for the Chinese quarter, it is

built of mud huts. The chief industry is the manufacture of textiles.

KASHMIR, or **CASHMERE**, *kash meer'*, **INDIA**, an extensive principality in the north-western part of Hindustan, subject to a ruler belonging to the Sikh race. It is politically subordinate to the British Indian Empire. The area is estimated at 84,432 square miles. Kashmir proper, which forms a small portion of the whole, is a valley surrounded by mountains, the Himalaya and Hindu Kush, and traversed by the river Jhelum. There are ten chief passes through the mountains into this valley, varying in height from about 9,000 to 12,000 feet. The elevated situation of the valley and the mountains of snow which surround it render the climate rather cold; but the region is well watered by streams and is very fertile.

Forests on the slopes, fields of corn, rice crops along the sides of the rivers, rich orchards and an abundant growth of flowers are features of the district. The common European fruits are grown, and attention is now being paid to the culture of the vine. The chief crops are wheat, barley, rice and Indian corn, and two harvests are reaped in the year. The chief article of manufacture is the celebrated Cashmere shawl, made from the inner wool of the wild goat. The capital of the whole principality is Jamoo. Srinagar, or Kashmir, is the maharajah's summer residence and is the largest town. This city was founded in the sixth century, coming under British protection in 1846. Population of the principality 1931, 3,257,527.

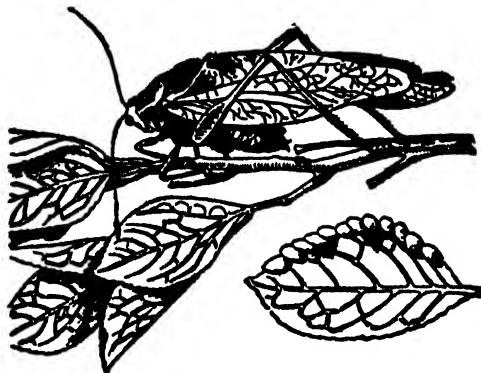
KATAHDIN, *ka tah'din*, **MOUNT**, in the northern part of Maine, is the most prominent peak in the state, having an altitude of 5,200 feet. It is formed principally of granite, large areas of which are exposed on its abrupt slopes. The summit is bare, except for lichens, and commands a magnificent view of the surrounding wilderness.

KATRINE, *kat'rin*, **LOCH**, a lake in Perthshire, Scotland, famous for its picturesque scenery. It is serpentine in form and lies in a lovely little valley from which rise lofty hills—Ben Venue, Ben A'an and others. It is the scene of Scott's *Lady of the Lake*, and the subject of some of Wordsworth's most exquisite verse. The lake is eight miles long, about one mile wide, and has an average depth of 142 feet. It is 364 feet above the sea. Numerous small streams flow into it and the little river Gyle; it drains into Loch

Vennacher. Loch Lomond is five miles distant. Loch Katrine is the chief water supply of Glasgow.

KATTEGAT. See CATTEGAT.

KA'TYDID, the name applied to a species of locusts whose "singing" sounds like the syllables *ka ti did*. These notes are not made



KATYDID AND EGGS ON A LEAF

by the throat, but are formed as the male rubs the bases of its front wings together. The katydid is about an inch long and is of a pale green color. See LOCUST; GRASSHOPPER.

KAULBACH, *kowl'bahK*, WILHELM VON (1805-1874), one of the greatest of modern German painters. He studied at the art academy in Düsseldorf under Cornelius, and in 1847 became director of the Munich Academy. He painted a large number of frescoes in public buildings and private palaces and executed many portraits of royalty. His most ambitious pictures, with the exception of the realistic canvas *The Madhouse*, are a series in the Berlin Museum depicting typical scenes from the great historic periods. They include *Tower of Babel*, *Age of Homer*, *Destruction of Jerusalem*, *Battle of the Huns and Romans*, and *The Reformation*.

KAUNAS, LITHUANIA. See KOVNO.

KAUNITZ, *kow'nits*, WENZEL ANTON DOMINIK, (1711-1794), an Austrian statesman and prince, the great minister of Maria Theresa. His most famous service to Austria was the alliance which he concluded with France, the hereditary enemy of Austria, against Frederick the Great. His influence in the government declined under Joseph II and Leopold II, and in 1792 he retired.

KAW, or **KAN'SA**, a tribe of Siouan Indians who formerly lived in Kansas and Missouri, near the mouth of the Kansas River. Driven from their holdings by the Dakota

Indians, they wandered about until they reached the present Oklahoma. About 400 Kaws are now living on the Kaw Reservation in that state.

KAZAN, *ka sahn'*, RUSSIA, formerly an important Russian educational center, and capital of the government of the same name, is on the Kazanka River, about four miles above its junction with the Volga, 430 miles east of Moscow. There are several mosques, a cathedral and imposing monuments. Before the revolution of 1917 the university was a great seat of Oriental learning, with nearly 1,000 students. The city had large wool-combing, weaving and dyeing establishments, tanneries and soap works and the timber, flour and hemp fairs were among the largest in the country. Population, 1933, 258,700.

KEARNY, *kahr'ni*, PHILIP (1815-1862), an American soldier, who served both his native country and France. He was born in New York City, was graduated at Columbia College in 1833 and then studied law. Having entered the army in 1837, two years later he went to France to study the tactics of the French cavalry. While abroad, he served in the French army in the Algerian War, and in 1840 he was made aid to General Macomb, general in chief of the United States army, and was on the staff of General Scott, his successor, from 1841 to 1845. Kearny took an active part in the Mexican War, fought in an Indian campaign in 1857, resigned, entered the French army and served with distinction in the Italian war, receiving the cross of the Legion of Honor. Returning to America in 1861, he reenlisted in the Union army, and was killed at Chantilly in September, 1862.

KEARSARGE, *keer'sahrj*, THE. See ALABAMA, THE.

KEATS, *keets*, JOHN (1795-1821), an English poet of the Romantic period, whose writings are distinguished for their lyric beauty. Keats was born at Moorfields, London. From 1803 to 1810 he was at a school at Enfield, and at the close of this period he was apprenticed to a surgeon. Although he was a fairly good surgeon, he found the work very much against his inclinations, which were all toward the beautiful and fanciful, and he gave up the profession that he might devote himself to study, preparatory to a literary career. His first volume of poems came out in 1817; *Endymion* appeared in 1818; his last volume of poetry, contain-

ing *Lamia*, *Isabella*, *The Eve of Saint Agnes*, *Hyperion* and other poems, appeared in 1820. By this time he had become so ill of consumption that he was advised to seek a warmer climate; but it was too late, and though he reached Rome, he lived but a short time. In the little Protestant cemetery of that city may be seen the grave of Keats, with its headstone carrying the pathetic epitaph he himself wrote: "Here lies one whose name was writ in water."

Keats's first volume of poems attracted little attention; the second, while it met with some favorable notice, was severely criticized in *Blackwood's Magazine* and *The Quarterly Review*. Shelley, who was a devoted admirer of Keats, deeply resented the attack on his friend's work, and in his great elegy, *Adonais*, stated his belief that the undeserved criticism had caused the poet's death. This view has more of sentiment than fact, but lovers of imaginative poetry find it easier to forgive Shelley's emotional outburst than the unsympathetic attitude of the critics. It is on his third volume that the fame of Keats rests, and the delicate, often faultless, beauty of these poems gives him rank with the foremost of British poets. According to his conception, philosophy, politics and ethics had no place in poetry, which should concern itself merely with beauty. And the beauty to the worship of which Keats gave himself was not spiritual beauty, but the highest type of sense-impressions. In description of form and color, he has never been surpassed.

KEELEY CURE, a method of treating confirmed drunkards, so called because it was originated by Dr. Leslie Keeley (see below). The first sanitarium offering the cure was opened at Dwight, Ill., in 1880, and the reputation it won led to the establishment of numerous others in various parts of the Union. Eventually Dr. Keeley sold his rights to the cure, which was based on a secret compound containing bichloride of gold. The Keeley method is being rapidly replaced by others involving less restraint.

Leslie Keeley (1836-1900) was born in Saint Lawrence County, N. Y. He was educated at Rush Medical College, Chicago, and during the Civil War was an army surgeon.

KEENE, LAURA (about 1820-1873), the stage name of **MARY MOSS**, an actress, a native of England and eventually a resident of the United States. She first achieved

success in London, in 1851, as Pauline in *The Lady of Lyons*. In 1855 she opened a theater in New York City, and three years later produced *Our American Cousin*, having among the supporting actors Joseph Jefferson and the elder Sothorn. It was at a presentation of this play that President Lincoln was assassinated in Ford's Theater at Washington, in 1865.

KEENE, N. H., the county seat of Cheshire County, forty-three miles west of Manchester, on the Ashuelot River, and on four lines of the Boston & Maine Railroad. The city contains railroad repair shops, sash and blind factories, furniture and other woodenware plants, a shoe factory and a woolen mill, and it manufactures manifold books and loose-leaf ledgers. It is located on a plain surrounded by high hills, and has about 220 acres in parks. The city has a state normal school, a library and a hospital. The place was settled in 1734, and was known as Upper Ashuelot until its incorporation under the present name, in 1753. The city was chartered in 1874. Population, 1920, 11,210; in 1930, 13,794.

KEEWATIN, *kee wah'tin*, formerly a district of Canada, now a Provisional District of the Northwest Territories, stretching from Manitoba to the Provisional District of Franklin. The old Keewatin was 1,300 miles long and had an area of 756,000 square miles. In 1912 178,100 square miles of the district were added to the province of Manitoba, the remainder being divided for a time between Ontario and North West Territories.

KELLER, HELEN ADAMS (1880-), an American writer and lecturer whose life story shows the wonderful progress made in modern times in teaching those who are blind and deaf. An attack of scarlet fever destroyed the senses of sight and hearing when she was but nineteen months old. When she was seven years old Miss Anne Sullivan (Mrs. John A. Macy) was secured as her teacher, and the child's progress was extraordinary. She learned to read, write and talk with her fingers and finally to speak. In 1900 she was graduated from Radcliffe College. She has written books and magazine articles, and has appeared on the lecture platform.

KELLOGG, FRANK BILLINGS (1856-), lawyer and statesman. He was born in Potsdam, N. Y., but has lived in Minnesota since he was a young boy, first at Rochester, and since 1887 at St. Paul. As a lawyer, he be-

came Federal counsel, prosecuting trusts and investigating railways.

He served as U. S. Senator, 1917-1923, and as Ambassador to Great Britain, 1924-1925. He was Secretary of State under President Coolidge from 1925 to 1929, and assisted in negotiating debt-funding agreements with European states, in conferring on naval armaments in 1927 and in the Tacna-Arica negotiations.

He took a leading part in the negotiations leading to the multilateral treaty called the "Pact of Paris" which renounces war as a national policy; it was signed by fifteen principal nations. In 1930 Mr. Kellogg was elected a member of the World Court for a term of nine years; he resigned in 1935.

KELP, a crude alkaline substance obtained by burning such seaweeds as deep-sea tangle and wrack. These are found off the coast of Brittany, Scotland, Ireland and the Pacific coast of the United States. Kelp consists of potassium sulphate, potassium chloride, sodium carbonate and other chemicals. It is of commercial value as a source of iodine (which see).

KELVIN, WILLIAM THOMSON, Baron (1824-1907), one of the greatest mathematicians and physicists of modern times, born at Belfast. He was educated first at Glasgow University and then at Peterhouse, Cambridge, and at the age of twenty-two he was appointed professor of natural philosophy in the University of Glasgow, a post which he held for fifty years. Among the most important of his contributions to electrical science is the construction of several delicate instruments for the measurement and study of electricity. He also invented an improved form of the mariner's compass.

KEMAL, MUSTAPHA or MUSTAPHA KEMAL PASHA, *kay ma'hl, moos'tah fah*, (1880-), President of Turkey, was reared in humble circumstances. He secretly entered a military preparatory school where he showed marked ability in mathematics. He held various posts in the sultan's army, but maintained a very critical attitude toward government policies. At times he was deprived of command only to be assigned fresh commissions. The younger officers loved and trusted him.

He took a leading part in the defense of the Dardanelles during the World War. He had the command of different army corps and was driven from Palestine by the British arms. During demobilization in

northeastern Anatolia he began secret plotting that eventually brought the downfall of the sultanate and the establishment of the republic.

The congresses which he assembled in 1919 set up a standing committee with Kemal at the head. The government at Constantinople was in a short time deprived of power, the Sultan forced to flee and the new national assembly at Ankara, the new capital, assumed full control of national affairs.

Kemal led the successful war against the Greeks in 1921. He led in all of the political activities by which the new government was organized. The Republic was proclaimed on October 29, 1923, and Kemal was elected the first president. He became in fact the dictator of Turkey even though adhering to constitutional and legal forms.

Kemal has been noted for the many radical reforms he has introduced into Turkey: the abolition of polygamy, veils for women and the fez for men, the substitution of the Roman for the Arabic alphabet, introduction of the Gregorian calendar, equal rights for women, the disestablishment of the Mohammedan religion and many other innovations. See ANGORA and TURKEY.

KENILWORTH, ENGLAND, a town in Warwickshire, four miles north of Warwick. Nearby is Kenilworth Castle, founded in the reign of Henry I, and conferred by Queen Elizabeth upon the Earl of Leicester, whose gorgeous entertainment of the queen there, in 1575, is described in Scott's novel *Kenilworth*. The castle is now an ivy-covered ruin. Population, about 6,800.

KENNAN, GEORGE (1845-1924), an American traveler and writer, born at Norwalk, Ohio. He was educated in the common schools, studied telegraphy and became an operator on the lines of the Russo-American Telegraph Company in Kamchatka and Siberia. Kennan returned to the United States, but in 1870 continued his explorations in Russia. In 1885 and 1886 he investigated the convict and exile system of Siberia, making a journey of 15,000 miles. Later he embodied his experiences and conclusions in many magazine articles, books and lectures. He was expelled from Russia in 1901, while making further investigations. Kennan served as special war correspondent for New York papers during the Spanish-American and Russo-Japanese wars. His publications include *Siberia and the Exile System*, Cam-

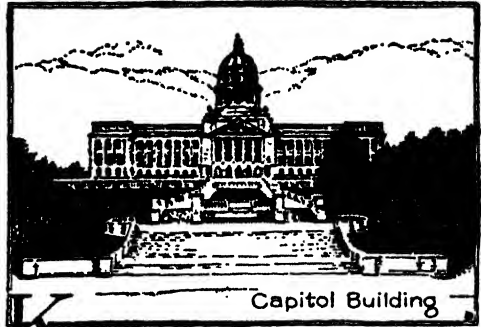
paingning in Cuba, The Tragedy of Pelee, A Russian Comedy of Errors (1915), *Misrepresentation in Railroad Affairs* (1916) and *The Salton Sea* (1917).

KENNEBEC, *ken's bek* a river of Maine which rises in Moosehead Lake and after a course of 150 miles, mostly in a southerly direction, empties into the Atlantic Ocean twelve miles below Bath. Its chief tributary is the Androscoggin. The Kennebec has falls at various points in its course and furnishes valuable water power. It is navigable for large ships as far as Bath.

KENO'RA, Ont., on Lake of the Woods, and two great railway systems, the Canadian Pacific and Canadian National railways. It is the industrial center of the Lake of the Woods district, and has large flour and lumber mills, two boat-building factories and two grain elevators. The town owns its telephone, light and water systems. Good hunting and fishing in the neighborhood have made it a popular summer resort. Population, 1931, 6,766.

KENO'SHA, Wis., settled in 1835, is the county seat of Kenosha County, thirty-four miles south of Milwaukee, on Lake Michigan and on the Chicago & North Western railroad and electric lines connecting with Milwaukee and Chicago. The city has a fine harbor, with an increasing trade, and the manufactures include automobiles, underwear, hosiery, leather, metal beds, mattresses and furniture, and various machine-shop products. Particularly in the making of automobiles has the city become well known. It contains the Kemper Hall School and Simmons Memorial Library. The place was first incorporated in 1841. Population, 1920, 40,472; in 1930, 50,262, a gain of 24 per cent.

KENT, JAMES (1763-1847), an eminent American jurist, author of a famous work entitled *Commentaries On American Law*. He was born at Fredericksburg, N. Y. Kent was educated at Yale College, and was admitted to the bar in 1785. He became professor of law at Columbia College and rose to be chancellor of New York (1814-1823). His *Commentaries*, published between 1826 and 1830, at once became a standard work which has had a great influence upon American legal practice and legislative principles. No man can qualify for examination for a legal diploma until he has read this standard book of fundamental law.



KENTUCKY, a south-central state of the American Union, the seventeenth in population and the thirty-sixth in area. Its popular name, **BLUE GRASS STATE**, refers to the beautiful grass-covered plain in the north-central part, on which have been reared many of the thoroughbred horses for which Kentucky is famous. Its history dates back to colonial days, for the first settlements west of the Alleghenies were made in Kentucky just before the outbreak of the Revolution; when it entered the Union as a state, June 1, 1792, it was represented on the flag by the fifteenth star. Only Vermont, outside the thirteen original states, preceded it in point of time.

Kentucky lies south of Illinois, Indiana and Ohio, from which it is separated by the Ohio River. Big Sandy River and Tug Fork separate it from West Virginia on the northeast; the Mississippi is the west boundary, forming the dividing line between Kentucky and Missouri. On the southeast the state touches Virginia, and its entire southern boundary line adjoins the northern frontier of Tennessee. The greatest length from east to west is about 500 miles, and from north to south, about 175 miles. The area is 40,598 square miles, of which 417 square miles are water. Kentucky is between Ohio and Indiana in size, having an area over 4,200 square miles in excess of that of Indiana. In 1920 the population was 2,416,630; in 1930, 2,614,589, a gain of about 9 per cent. The census reported 226,000 Negroes.

Surface and Drainage. The surface as a whole is mainly a plateau having an average of about 800 feet above sea level. This plateau, however, is divided into a number of distinctly marked physical regions. The Cumberland Mountains run along most of the southeastern boundary. West of these and nearly parallel to them is the shorter range

of Pine Mountains. The highest peaks in these ranges attain an altitude of 4,000 feet, and others are from 2,000 to 3,000 feet high. Between these ranges lies the Cumberland Valley, which has a length of seventy-five miles and a breadth of about fifteen miles. The floor of the valley is from 1,200 to 1,500 feet above sea level. The combination of mountain and valley in this region offers some of the most beautiful scenery in the entire Appalachian Mountain system. The whole eastern part of the district north and west of the Pine Mountains is diversified by hill and valley, giving a very pleasing aspect to the whole region. This portion of the state is quite heavily timbered with several varieties of hard wood.

Reaching across the state from northeast to southwest and bordering upon the area already described is a region diversified by numerous conical sandstone hills, which rise from 1,200 to 1,300 feet above sea level. The peculiar appearance of this district has caused it to be named the *Knobs*. The Knobs extend along the southern boundary near the central part of the state for many miles. Another section of the Knobs reaches to the Ohio River in a north and northwest direction. Lying between these two branches of the Knobs and extending from the most northerly point in the state somewhat more than halfway to the southern boundary, is the celebrated Blue Grass region, so named because of the bluish hue which the grass seed pods give to the landscape during the summer.

To the west of the Blue Grass region is an area of slightly diversified country, underlaid with thick limestone formations, in which are found Mammoth Cave and numerous other caverns of less note. To the west and north of the limestone region stretches a hilly section that in appearance closely resembles the southern portions of Indiana and Illinois; the southwestern part of Kentucky is similar in character.

The general slope of the state is toward the north and northwest; all of the rivers flow into the Ohio or the Mississippi. Some of these streams have worn deep channels between the hills and low mountains. Passing from west to east we may list the more important rivers in the order of their location: the Tennessee, the Cumberland, the Green, the Kentucky and the Licking. The first two are navigable across the state, and the Green, the

Kentucky and the Licking are navigable through the lower sections of their courses. Previous to the construction of railway lines these rivers formed important outlets to the Ohio River. There are no lakes of importance in the state.

Climate. The climate of Kentucky is warm-temperate, equable and healthful. The mean annual temperature is about 55° F. In summer the thermometer may reach 100°, but the average temperature for July is 78°. The winters are warm, having an average temperature of 35°; the snowfall is light. The annual rainfall is about 44 inches.

Mineral Resources. The eastern and southeastern districts are underlaid with coal measures, which have an area of about 9,000 square miles and yield an excellent quality of bituminous coal. About 4,000 square miles of territory in the northwestern part of the state are a continuation of the coal fields of Illinois and Indiana. Although its area is smaller than that of the eastern region, this part of the state has produced a larger quantity of coal, mainly because of its better transportation facilities. For many years past the coal output of the state has been above 35,000,000 tons a year, sometimes rising to 50,000,000 tons. Kentucky ranks fifth among the states in coal production, the value of the output being usually about three-fourths of that of all the minerals of the state combined. Another product of increasing importance is petroleum with an annual yield of more than 6,000,000 barrels. The state is one of the few districts that produce fluor spar (which see); it also possesses valuable quarries of sandstone and other building stones. Clay suitable for pottery, brick and tile occurs in abundance and is worked extensively. Other minerals found in the state are iron, lead, zinc, barite, natural cement, asphalt and also natural gas.

Agriculture. Nearly four-fifths of Kentucky is farm land; this is distributed into 246,000 farms. By far the most important agricultural product is tobacco, in which the state is second to North Carolina. The annual crop of some 280,000,000 pounds is two-thirds that of North Carolina, and is not far from one-fourth of the total crop of the entire country. Over 400,000 acres are devoted to this product. Corn stands next in importance, the crop often exceeding 67,000,000 bushels. For many years it did not fall below 90,000,000 bushels. Ken-

tucky also produces good crops of wheat and oats; its potato yield at times exceeds 4,000,000 bushels. Hay, sweet potatoes, yams, watermelons and orchard fruits are produced in large quantities; sorghum cane is also an important crop. Hemp production has been suppressed by the development of this industry in foreign countries.

Kentucky has many natural advantages for the production of livestock—excellent pasturage, a mild climate, and abundant crops of hay and corn. Besides its famous horses the state produces large numbers of swine and sheep; the annual cattle value is \$18,230,000; the value of mules raised reaches about the same figure.

Manufactures. The making of tobacco products is one of the leading manufacturing industries; it was one of the first to be established. Lexington is a world center for the marketing of leaf tobacco. The products of the tobacco factories include chewing and smoking tobacco, cigars, cigarettes and snuff. Kentucky has been distinguished for many years for the distillation of whiskey. The manufacture of lumber and timber products is of increasing importance with a value equal to the products of the flour and grist mills. Meat packing, tanning and the manufacture of iron and steel commodities are also important. The total value of manufactured products is about \$300,000,000 annually.

Transportation. In most parts of the state the roads are fairly good. The Dixie Highway crosses the state from Louisville to the southern boundary. Highways are being built to serve those communities in which railway facilities are inadequate. Kentucky contains 4,000 miles of railway, but it lies too far south to receive direct benefit from the great east and west trunk lines. There are a number of railroads running from north to south; some of them have built spurs extending into the most fertile regions. The Ohio and its largest tributaries, the Tennessee, the Cumberland, the Green and the Licking, furnish important waterways. Three air lines cross the state. Three divisions of one large bus company serve the entire state.

Government. The legislature consists of a senate of thirty-eight members, elected for four years, and a house of representatives of 100 members, elected for two years. The legislature meets biennially in a session limited to sixty legislative days. The executive department consists of a governor, a lieutenant-

governor, a treasurer, an auditor of public accounts, a commissioner of agriculture, labor and statistics, a secretary of state, an attorney-general, and a superintendent of public instruction. Each of these officials is elected for a term of four years; they are ineligible for reelection for the succeeding term. The judicial department culminates in a supreme court which is a court of appeals; there are seven judges in this court, each one selected from a given district to serve for eight years. The lower courts are the circuit courts, county courts and justice courts. The circuit courts sit in each district of the state and are presided over by judges elected in their respective districts for a term of six years.

Education. Separate schools are provided for white and colored pupils. The larger towns and cities maintain excellent systems of graded schools; the county is the unit for rural school organization, management and support. There are four state normal schools, two in the east at Richmond and Morehead; and two in the west at Bowling Green and Murray. These schools are maintained for the training of white teachers. The state university at Lexington now embraces seven colleges and enrolls about 3,000 students; it is at the head of the public school system. The state normal school for colored teachers is conducted at Frankfort. These institutions are supplemented by numerous colleges and secondary schools maintained by various denominations. Among the more important of such schools and colleges are Transylvania University at Lexington, Wesleyan College at Winchester, Berea College at Berea and Centre College at Danville. The University of Louisville is in part a municipal institution.

A strict compulsory education law went into effect in 1912 and at the same time the office of supervisor of rural schools was established. As a consequence illiteracy among the scattered rural population has been greatly reduced. The "moonlight" school meets at night and is conducted by voluntary teachers. In Rowan county through these night schools illiteracy was almost wiped out in three years' time. The movement spread in Kentucky and to many other states.

Other Institutions. The state school for the blind is at Louisville, the school for the deaf is at Danville; the institution for feeble-minded children and the state reformatory are maintained at Frankfort. Hospitals for the insane are conducted at Lexington, Hop-

KENTUCKY

THE BLUEGRASS STATE



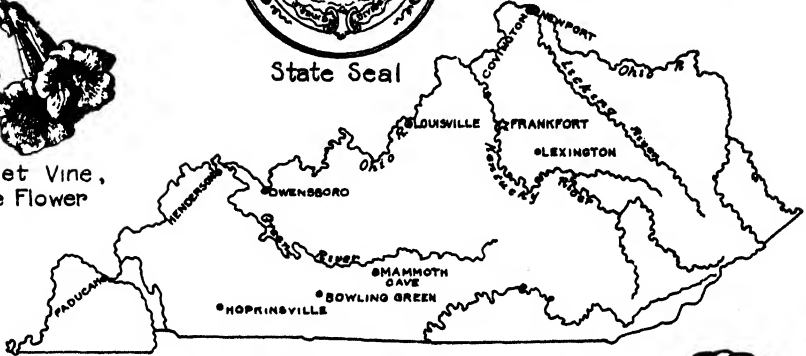
Trumpet Vine,
State Flower



State Seal



A Kentucky
Thoroughbred



Sixth State in
Production
of Corn



Stalactites in Mammoth Cave



First State in Production
of Tobacco



Federal Hill, where
"My Old Kentucky Home"
was written



Henry Clay Monument, Louisville

Items of Interest on Kentucky

The Ohio River has been an important factor in the development of Kentucky. The first steamboat on the Ohio was the "New Orleans," built in 1811. It plied from Pittsburgh to New Orleans.

The highest point in the state is Big Black Mountain, with an altitude of 4,100 feet. It is situated in Harlan County on the Virginia state line.

The Blue Grass Region is like a beautiful park, without ragged cliffs, precipitous slopes, or flat, marshy bottoms, yet marked by rounded hills and beautiful dales; the blue grass appears as a thick, soft mat spread widely over the country.

The drainage of the cave region, a district of 8,000 square miles, is mostly through underground channels.

Extensive important timber areas traverse the state; the principal species are the tulip tree, oak, maple, beech, chestnut, elm, cypress, ash, hickory and walnut.

The best soils are those formed by river deposits and those of the Blue Grass region composed of decayed limestone, rich in phosphorus.

The two most important tobacco-growing areas are the "Black Patch," in the southwest, adjacent to the Tennessee "Black Patch" and the Blue Grass region. The former produces a heavy black leaf sold almost entirely for export; the Blue Grass region yields the red and white Burley with its light leaf, a good absorbent, used largely for chewing tobacco.

Pearls are found in the state, especially in the Ohio and Cumberland Rivers.

Kentucky was a slave state until the adoption of the 13th amendment to the Federal constitution in 1865.

The first train drawn by a locomotive in the state ran from Lexington to Frankfort in 1835; the distance is twenty-seven miles.

Kentucky has had four constitutions, adopted respectively in 1792, 1799, 1850 and 1891. According to the present constitution corporations are forbidden to contribute money for campaign purposes, on penalty of forfeiting their charters, or, if not chartered in the state, of losing

their right to carry on business in the state.

Local option on the liquor question is provided for in the constitution. The most of Kentucky was "dry" before the ratification of the Eighteenth Amendment.

Child labor is carefully regulated by acts of the state legislature which prohibit the employment of children under fourteen years of age during the term of school, and of children between fourteen and sixteen unless they have employment certificates showing the child's ability to write and read English and to meet certain other requirements. Children under sixteen are not allowed to work more than ten hours a day or sixty hours a week, or between 7 P.M. and 7 A.M.

The school population numbers over 700,000 with an enrolment of more than 600,000; there are approximately 18,000 teachers and school executives.

Questions on Kentucky

What is the area of Kentucky?

What are its main physical divisions?

Name the principal rivers lying wholly within the state?

Where is Mammoth Cave?

What and where is the Blue Grass region? Why is it famous?

What is the average annual temperature?

What is the most valuable crop in Kentucky? What crop stands next in value?

How many miles of railway are there in the state?

What national highways pass through the state?

Name some of the great men that appear in the history of the state?

What difficulties did the people of Kentucky pass through during the Civil War period?

What are the provision of the state constitution on campaign contributions?

Relate some interesting fact about Frankfort, Lexington, Paducah and Owensboro?

What necessary plans must be made for a visit through Mammoth Cave?

kinsville and Lakeland. The penitentiary is at Eddyville.

Cities. Kentucky has thirteen cities with populations over 10,000. The first five in order of size are Louisville, Covington, Lexington, Paducah and Newport. Frankfort is the capital.

History. Kentucky was probably first visited by Dr. Thomas Walker in 1750, but it was not settled until 1774, when James Harrod planted a colony at Harrodsburg. Meanwhile, Daniel Boone had led exploring expeditions into the region, and in 1775 he established Boonesborough. Virginia claimed the territory until 1790, when the Virginia legislature passed an act allowing separation which was accepted by a convention of the citizens of Kentucky. For many years, however, a strong sentiment in favor of the creation of an independent state had been growing and had been fostered by a land company known as the Transylvania Company, headed by Richard Henderson. The state was admitted to the Union on June 1, 1792. Isaac Shelby was elected as the first governor.

Kentucky took a prominent part in the War of 1812; its great leader, Henry Clay, was a conspicuous member of the war party. Following the Civil War civil government was soon reestablished and the state entered upon a period of prosperity. Many progressive laws have been enacted, including measures regarding workmen's compensation, pure food, forest conservation and minimum hours of labor for women and children.

Names conspicuous in the history of Kentucky include General Anthony Wayne, victor in Indian Wars, Henry Clay, statesman, Ephraim McDowell, surgeon, Stephen Collins Foster who wrote "My Old Kentucky Home" at Bardstown; Zachary Taylor and Abraham Lincoln, presidents of the United States, and Jefferson Davis, president of the Confederacy were all born in Kentucky.

Related Articles. Consult the following for additional information:

GEOGRAPHY

Ashland	Henderson
Bowling Green	Hopkinsville
Covington	Lexington
Cumberland Mountains	Louisville
Cumberland River	Mammoth Cave
Dixie Highway	Newport
Frankfort	Owensboro
	Paducah

BIOGRAPHY

Boone, Daniel	Foster, Stephen Collins
Clay, Henry	Lincoln, Abraham
Davis, Jefferson	Taylor, Zachary
	Wayne, Anthony

KENTUCKY AND VIRGINIA RESOLUTIONS, a series of resolutions adopted by the Kentucky and Virginia legislatures in 1798 and 1799. Those adopted by Kentucky were nine in number, were probably written by Jefferson and contained radical denunciation of the Alien and Sedition Laws, besides a protest and warning against the assumption by the Federal government of powers belonging to the states. In 1799 the legislature passed a resolution declaring the right of a state to nullify any Federal law which it deemed unconstitutional.

The resolutions passed by the Virginia legislature in December, 1798, were eight in number, were probably written by James Madison and were much milder in their expression. However, they contained the same principles. The two sets of resolutions were sent to the executives of all the states, and replies were received from many. All were unfavorable to the principles expressed in the resolutions.

KENTUCKY, UNIVERSITY OF, an institution of higher learning, situated at Lexington. It originated in 1866 as a department in an institution known as Transylvania University; it was transferred to its new location in 1878 and received its present name. The campus of over fifty acres was donated by the city of Lexington. The organization includes colleges of arts and sciences, agriculture (with home economics), commerce, education, engineering, law and the graduate school. A farm of 250 acres, with valuable equipment, is maintained in connection with the agricultural college; there is an experiment farm with ample facilities. In normal years the faculty numbers more than 150; the student enrolment reaches 3,000. The library contains 100,000 volumes.

KENYA (ken'yah) COLONY AND PROTECTORATE, a crown colony in British East Africa, bordering on the Indian Ocean from Umba River to Diek's Head and reaching inland to Lake Victoria and Uganda. The term "Protectorate" applies to that part of the region that is rented from the Sultan of Zanzibar. The area of the entire district is 224,000 square miles with an estimated population of about 3,000,000. Arabs and Swahilis are numerous on the coast; Bantu and other tribes occupy the interior.

There are nine provinces which are ruled under a constitution adopted in 1928. A legislative council of 18 members gives ad-

vice and consent to the Ordinances made by the governor who is assisted by an executive council.

Agriculture is the primary industry; the products are such as are grown in tropical, subtropical and temperate climates. Imports average £6,800,000 annually; exports are of less value. There are fewer than 2,000 miles of railway in the colony. The railway companies operate steamers on Lakes Victoria, Kioga and Albert and on the River Nile.

There are about 1,700 schools conducted chiefly by missionary societies.

KEOKUK, IA., the county seat of Lee County, 181 miles southeast of Des Moines on the Mississippi River at the mouth of the Des Moines River and on the Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific, the Wabash, and the Toledo, Peoria and Western railroads. It is at the southern end of the Mississippi River Scenic Highway.

The surrounding territory in three states is a rich agricultural area where field crops, truck farming and fruits grow in abundance. But manufacturing interests are predominant; 97 factories employing 3,000 persons produce aluminum, brass and iron castings, automobile parts, awnings, silicon steel, shoes, breakfast foods, candies, electric refrigerators, medicines, stock feeds, tanks, tractors and clothing.

Hydro-electric power is derived from the plant connected with the Keokuk Dam extending across the Mississippi River to Hamilton, Illinois. The power plant cost \$27,000,000 and yields 300,000 horse-power. Keokuk Lake above the dam is 65 square miles in area. The dam, locks and power-plant form one of the great engineering enterprises of modern times.

The Indian chief, after whom the place is named, is buried in Rand Park. Keokuk was incorporated in 1848; it is governed by a mayor and council. Population, 1930, 15,106.

KEPLER, JOHANN (1571-1630), one of the world's greatest astronomers, a native of Württemberg, Germany. From the chair of astronomy and mathematics at Gratz he went to Prague as assistant to Tycho Brahe in the royal observatory, and succeeded Tycho in 1601. The latter part of his life was passed as a professor of mathematics. Kepler's chief title of fame is his discovery of the three laws of planetary motion.

Kepler's Laws, in astronomy, three laws discovered by Johann Kepler, on which were founded Newton's discoveries, as well as the whole modern theory of the planets. They are:

(1) Every planet describes an ellipse, the sun occupying its focus.

(2) The radius vector of each planet (line joining the center of the sun with the center of the planet) sweeps over equal areas in equal times.

(3) The squares of the periodic times (the periods of complete revolution round the sun) of two planets are proportional to the cubes of their mean distances from the sun.

Using these laws as a basis, Newton was enabled to determine the laws of the attraction of gravitation.

KEROSENE, *ker' o seen*, an illuminating oil made by distilling crude petroleum. It was originally made from coal, and even yet is sometimes called coal oil. The manufacture of kerosene in America dates from about 1856. For many years it was extensively used for lighting, cooking and heating purposes, of late years it has been replaced in cities by gas and electricity, and after the introduction of the gasoline engine it lost its importance as a by-product of petroleum manufacture. Chemists and engineers hope to make kerosene a satisfactory fuel for internal-combustion engines, to relieve possible gasoline shortage and provide a cheaper fuel. Kerosene is usually colorless, and has a strong disagreeable odor. See PETROLEUM.

KESTREL, or **WINDHOVER**, a species of falcon widely distributed over Europe and Northern Africa and found in some parts of Asia. The kestrel is closely related to the American sparrow-hawk, which it resembles in size, color and habits. The color is red above, buff and fawn beneath, marked throughout with black. On the head and rump the feathers are bluish-gray. The female is usually a rusty brown. The kestrel is a strong flyer and is able to hover over one spot for a long time. When holding itself in this position it keeps its head to the wind, and because of this it is sometimes called the *windhover*. It feeds on mice and insects and can be trained to capture small birds. It occupies nests that have been deserted by crows and other birds, or lays its eggs among rocks, ruins of buildings or in tree hollows.

KETCH'UP, or **CAT'SUP**, said to be derived from the Malay word *kechap*, is the

name of a pungent sauce introduced from the East and employed as a seasoning for gravies, meat and fish. It was formerly prepared from mushrooms only, but tomatoes, cucumbers and numerous other products are now used for the purpose. The best ketchup is made from mushrooms and walnuts.

KEWANEE, *ke wah'nee*, ILL., in Henry County, fifty miles northwest of Peoria, on the Chicago, Burlington & Quincy railroad, which was built to the city in 1855. The city is the seat of extensive iron works and has manufactories of agricultural implements and steam-heating apparatus. The commission form of government was adopted in 1910. There is a Carnegie Library; other important buildings are a Federal building, an armory, a Masonic Temple, a large hotel and hospitals. Population, 1920, 16,026; in 1930, 17,093.

KEY, in music, a term used to designate all the tones of any given scale, considered collectively. As distinguished from scale, which means a melodic succession of single tones, the key is the harmony of tones produced simultaneously by the entire scale or by any group of tones in it. For every scale there is a key—twelve major and twelve minor, named according to the tone with which each begins. The key of *C* has no sharps or flats, and is called the *normal*, or *natural*, key.

The word *key* is also used to denote the parts of certain musical instruments manipulated by the fingers. On the piano the keys are the exterior white and black parts of levers which when pressed cause the hammers to strike the strings; on the organ they are similar levers which open valves for the passage of wind to the pipes. The keys of wind instruments are metal contrivances which cover the air holes.

KEY, *kee*, FRANCIS SCOTT (1780–1843), an American lawyer who won lasting fame by writing the song that is to-day the national anthem of the United States—the *Star-Spangled Banner*. (How he was moved to write this favorite among patriotic songs is told in these volumes in the article *STAR-SPANGLED BANNER*.) Key was born in Frederick County, Md., and was educated in Annapolis at Saint John's College. He practiced law at Frederick City and at Washington, becoming district attorney for the District of Columbia. A collection of his poems was published in 1857.

KEY WEST, FLA., the county seat of Monroe County, on Key West Island, which is the most westerly of the Florida Keys, at the southern extremity of Florida, about ninety miles nearly north of Havana, Cuba. In 1912 a railroad to the mainland was opened for traffic. This was the strangest railroad in the United States. It was built across the string of narrow islands between the mainland and Key West, and on concrete viaducts between the islands. In a devastating hurricane in 1935 the road was partially destroyed. Subsequently a bus service was substituted between Florida City and Key West. At the entrance, there are two light-houses. It is on a number of steamship lines



THE RAILROAD THAT GOES TO SEA
Florida East Coast Railway extension to
Key West; destroyed in 1935.

and has a considerable trade in fish, fruit, vegetables, turtles, salt, tobacco and other goods. The manufacture of cigars, mostly by Cubans, is the principal industry, though much of it has moved to Tampa; sponge fishing is also of considerable importance. The city has a naval station, with docks, machine shops, a marine hospital and barracks. The Convent of Mary Immaculata is here, also San Carlos Institute, maintained by the Cuban government. There are two airports. Other interesting features are a courthouse, a Federal building, a city hall, a public library and a hospital. An old Spanish fort here is the southernmost building on American soil. Population, 1930, 12,831.

KHAIBAR, *ki'bur*, PASS. See **KHYBER PASS**.

KHAKI, *kah'ke*, a Hindu word meaning *dusty*, applied to a twilled, closely-woven, dust-colored cotton fabric, used principally

for military uniforms. Khaki was first used by Great Britain for its native Indian troops in 1848. The word has had an elastic application, having been used to designate strong twilled-cotton goods of whatever color and also dust-colored military serge. Since 1900 a certain olive-drab dye has had so wide a use for uniforms that the two have become inseparably associated, with the result that the color or the uniform material with which it is dyed are both called khaki. As material for uniforms khaki has never been excelled, its color blending with the landscape.

KHAM SIN, *kahm seen'*, the name of a warm wind, or sirocco, which blows over Northern Africa in the early spring. The word means *fifty*, and this name is given the wind because it is usually of fifty days' duration. The kham sin is a high, hot wind and often fills the air with dust. It originates in the Sahara Desert.

KHAN, *kahn*, a title given by Eastern nations to princes, commanders and governors. It is now generally reserved for governors of cities and provinces. The title is sometimes used independently, and sometimes with the surname.

KHARKOV, *kahr'kawf*, a Russian city in the district known as the Ukraine (which see). It is situated 420 miles southwest of Moscow. Before the revolution of 1917 it was the capital of the government of Kharkov, and a thriving commercial center, maintaining four fairs a year. In the city are tobacco factories, soap factories and a sugar refinery. The many educational institutions include a university, a technical school and a medical school. Population, 1933, 654,300.

KHARTOUM, *kahr toom'*, an ancient city, the capital of Anglo-Egyptian Sudan, situated on the left bank of the Blue Nile, near its junction with the White Nile, and on the Cape-to-Cairo Railway. There are several mosques, Christian churches, government buildings and barracks here. Khartoum is the emporium of a large trade, ivory, gums, ostrich feathers and senna being exchanged for European goods. The town maintains eight primary schools, and an industrial workshop, and is the seat of Gordon Memorial College, which gives academic, normal and technical courses. It was made the seat of the governor-general of the Egyptian Sudan in 1850, and since that time it has grown in commercial importance. In 1885 it was taken by the Mahdi, who mas-

sacred the whole British garrison, including their gallant commander, General Gordon. In 1898 it was again captured by Lord Kitchener, who overthrew the Mahdi. Population, about 50,000.

KHAYYAM, *OMAR*. See **OMAR KHAYYAM**.

KHEDIVE, *keh deev'*, the title borne for many years by the ruler of Egypt. It is a Persian word, meaning *prince*, or *Lord*, and was adopted in 1867.

KHIVA, *ke'vah*, a Soviet Russian territory, part of the Uzbek Socialist Soviet Republic since 1924. It is bounded on the north by the Aral Sea, on the east by the Oxus River, and on the south and west by the Russian province of Transcaspia. Khiva has an area of 24,000 square miles and an estimated population of 646,000. Nearly two-thirds of the people are nomad Turkomans. The religion is Mohammedan. Cotton and silk are the chief commercial products. The capital, Khiva, lies on an alluvial flat at the junction of two canals, fifty miles west of the left bank of the Amu. Population, about 5,000.

KHY'BER, *ke'bur*, **PASS**, one of the most important mountain passes in the world. It is situated in Northwest India, connecting the Punjab with Afghanistan. The pass is thirty-three miles long, is in some places less than twenty feet wide, enclosed on each side by cliffs of shale and limestone which rise to heights from 600 to 1,000 feet, beyond which tower lofty mountains. The pass is the only practicable route between India and Afghanistan, and its strategic importance has been recognized from early times. The pass is under the control of the government of India and is strongly defended. The pass is open to travelers under guard only twice a week; it is closed at other times.

KIAO-CHAU, *kyow' chow'*, **CHINA**, a town, and district situated near the east coast of Shantung province. The area is about 200 square miles, and the population is about 192,000. The town is a walled Chinese municipality, which at one time was a thriving port of Kiao-chau Bay. Through the filling in of the harbor it became an interior town. The district was seized from China in 1897 by Germany. A long-term lease was secured, and Tsing-tau, a small village on the eastern shore of the bay, was purchased. On August 15, 1914, Japan, as an ally of Great Britain, called upon Germany to surrender the entire leased territory by Septem-

ber 15. No reply having been received, Japan began a siege of Tsing-tau, which was captured on November 7. Japan retained control of the occupied district until 1920; the peace treaty restored it to China.

KICKAPOO, *kik'a poo*, an Algonquian Indian tribe which lived in the Ohio Valley prior to 1819. Fewer than 1,000 Kickapoo are now living. There are about 300 in Oklahoma, and the remainder are in Mexico. The American Kickapoo are slowly dying out. After 1819 the tribe moved westward, and in 1852 hundreds went to Texas; from that state they journeyed into Mexico, and the number there is said to be on the increase.

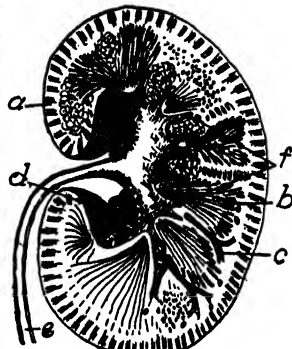
KIDD, WILLIAM (about 1650-1701), a celebrated pirate, known as CAPTAIN KIDD. He was probably born in Scotland. He became a trader in the American colonies, and in 1696 was appointed captain of the *Adventure*, a galley of thirty guns, and was given a king's commission to suppress piracy in the waters near Madagascar. He sailed for the East Indies and, instead of capturing pirates, turned pirate himself and robbed a number of trading vessels. On his return to New York he was arrested on charges of piracy and for the murder of one of his gunners. He was taken to England and tried, being allowed no counsel, and was condemned and hanged. Many fruitless searches have been made for the treasure which, according to rumor, Kidd and his crew buried on Long Island or near the Hudson River.

KIDNAPPING, the act of depriving a person of his liberty without his consent, or the consent of his legal guardians. The act may be committed against children or adults, and is punishable by fine or imprisonment. The exact penalties for kidnapping, and statements defining the meaning of the term, are found in the statutes of all civilized countries.

KIDNEYS, THE, in the human body a pair of organs which separate waste matter from the blood. They are situated one on each side of the spinal column and extend downward from the eleventh rib. The right kidney is a little lower than the left, owing to the position of the liver. The kidneys are about four inches long, two and one-half inches broad and one and one-half inches thick, and each weighs about four and one-half ounces. They are shaped somewhat like a bean, are reddish in color, are composed of

a dense substance that is easily crumbled, and are abundantly supplied with blood by the renal artery, a branch of the aorta. A corresponding renal vein carries the returning blood to the ascending vena cava. The kidneys take urea and other waste from the blood that circulates in the capillaries around them.

Urea is the most important substance found in urine, which is carried by the ureters to the bladder, where it is held until expelled from the body (see URINE). Infections of the kidneys are responsible for serious diseases, including Bright's disease (which see); irregularities in the functioning of these organs should have the attention of a reliable physician.



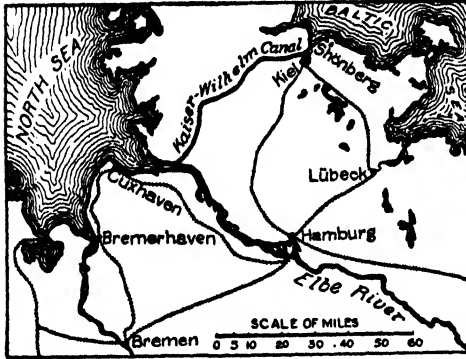
TRANSVERSE
SECTION

(a) cortex; (b) medulla; (c) small branch of the renal artery; (d) renal artery; (e) ureter; (f) pelvis.

KIEL, *keel*, GERMANY, a great naval center and the chief city of the Prussian province of Schleswig-Holstein, located fifty-three miles northeast of Hamburg, on an inlet of the Baltic Sea. Kiel is the eastern terminus of the Kaiser Wilhelm Canal, or Kiel Canal, (which see), and until the end of the World War it was the headquarters of the German Grand Fleet. The chief industrial establishments of this prosperous city include shipbuilding yards, iron foundries, oil mills, tanneries and tobacco works. In normal years Kiel carries on an active trade with Denmark and Sweden in flour, coal, fish and dairy products. Population, 1933, 218,123.

KIEL CANAL, to the end of the World War in 1918 also known as KAISER WILHELM CANAL, is a great German artificial waterway connecting the Baltic and the North Seas. As completed in 1895 it was 61.3 miles long, 190 feet wide at the surface and 29.5 feet deep. The original cost was \$39,000,000. The rapid growth of shipping and the increased size of vessels made a larger canal necessary. In 1908, accordingly, work was begun, and the enlarged canal was formally opened by Emperor William II on June 24, 1914.

The new Kiel Canal is 140 feet wide at the bottom and 330 feet wide at the water surface. The depth is thirty-six feet and there are eleven points at which the largest vessels may pass each other. The new locks at the



KIEL CANAL OR KAISER WILHELM CANAL ends are 1,140 feet long and forty-six feet deep, large enough to accommodate the largest dreadnought or ocean liner. The Kiel Canal was built primarily for its usefulness in case of war. It connects the North Sea with the Baltic, thus eliminating the need of a voyage around Denmark and enabling the German fleet to be quickly shifted from one sea to the other without exposure to attack.

During the World War (which see), the canal was the safe refuge of the German main fleet; the warships of the empire could not freely operate on the seas because of the effective blockade by the fleets of Great Britain, France and the United States.

The canal is also used by merchant ships; in times of peace its annual tonnage is about ten times that of the Suez Canal. The peace treaty closing the World War demanded that the canal be opened to all nations without restrictions.

KIEV, ke'yef, RUSSIA, the capital of the Ukrainian S. S. Republic, for many years one of the most important centers of trade and culture in all Russia. Kiev is so old that it is sometimes called the "mother of Russian cities." It is situated on the Dnieper, 670 miles south of Leningrad. The city is divided into three parts—old Kiev; the commercial quarter, Podol, and the portion which contains the old fortifications, known as Petchersk. In the early years after the introduction of Christianity into Russia, the city was the center of the new religion,

and it contains many notable old ecclesiastical buildings. Before the revolution it had manufactories of tobacco, paper, chemicals and hardware, but its chief industries were the refining of beet sugar and milling and distilling. It has a good harbor, and normally its trade is extensive. The city suffered severely from the depredations of soldiers during the World War, but it subsequently recovered its former prosperity. Population, 1933, 538,600.

KILAUEA, ke lah oo a'ah, a famous crater on the eastern slope of the volcano of Mauna Loa in Hawaii. It forms a great cavity on the mountain side nine miles in circumference and in places is from 500 to 800 feet deep. Parts of the crater floor are frequently covered with vast pools of boiling lava, which sometimes threaten to overflow upon the surrounding mountain sides. Kilauea has had five great eruptions, the last in 1868.

KILIMANJARO, kil e man jah'ro, the highest mountain in Africa. It is situated at the eastern end of the great equatorial plateau, about halfway between the southern shore of Lake Victoria Nyanza and the Indian Ocean. It has two peaks, Kibo, 19,710 feet, and Mawenzi, 17,570 feet in height. Both of the peaks have extinct snow-capped craters, that of Kibo being 6,000 feet in circumference and 600 feet deep. On the gentle incline of the southern slope are numerous small streams and glaciers.

KILLARNEY, kil ah'ni, LAKES OF, three connected lakes in Ireland, in County Kerry, celebrated for their beauty and for the picturesque scenery of the region in which they lie. Verdant islands stud the lakes, and on their shores rise richly-wooded mountains. Ross Island is especially interesting to tourists as the site of an old castle once used as a stronghold by the O'Donoghues; on Innisfallen are the ruins of a famous abbey dating from the sixth century.

Killarney is also the name of a small market town situated a mile and a half from the lower lake of the group, and forty-six miles northwest of Cork. Its inhabitants earn a good living by making fancy articles and souvenirs to sell to the tourists who annually flock to the district. Population, about 6,000, exclusive of summer residents.

KILLDEER, a variety of plover common in America, named from its plaintive cry. See PLOVER.

KILN, *kil*, a structure of brick or stone used to harden, dry or burn various substances. In brick drying (see BRICKS AND BRICKLAYING) kilns from ten to twelve feet high and thirty feet in diameter are used. In pottery making various styles of kiln are used, according to the kind of ware manufactured. All kinds of kilns are constructed on the same principle; namely, the generation of ample and regular heat with the greatest possible economy of fuel.

KILOGRAM, a weight in the metric system, equal to 1,000 grams, or 2.2046 pounds. The word is sometimes shortened to *kilo*. See METRIC SYSTEM; WEIGHTS AND MEASURES.

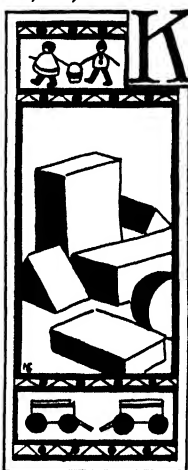
KILOGRAM-METER, *kil'o gram me ter*, a unit of measurement in the metric system, expressing the mechanical work expended in raising a body whose weight is one kilogram (2.2 lb.) through the vertical height of one meter (3.2809 feet). It is equal to 7.233 foot pounds. See FOOT POUND; METRIC SYSTEM.

KILOMETER, a unit of linear measurement in the metric system, equal to 1,000 meters, or 3280.8 feet. This is about five-eighths of a statute mile. Americans and Canadians were unaccustomed to the word and its meaning until the World War, during which struggle all advances and retreats of armies were referred to in terms of kilometers. See METRIC SYSTEM; WEIGHTS AND MEASURES.

KILOWATT, the unit in general use for measuring electrical energy, even in countries where the metric system is employed. A kilowatt is 1,000 watts; 746 watts are equivalent to one horse power, hence the kilowatt is equivalent to one and one-fourth horse power, or a power that would raise a weight of 41,250 pounds one foot in one minute.

KIMBERLEY, *kim'bur ly*, SOUTH AFRICA, a town in the province of Cape of Good Hope, capital of Griqualand West, and the

center of the rich diamond fields of South Africa. It is 647 miles northeast of Cape Town, with which it has rail connection. A railroad also joins Kimberley and Port Elizabeth. The place has fine public buildings, a free library, botanical gardens, a theater and a museum. It is lighted by electricity and is supplied with water by an up-to-date system. Kimberley was founded in 1871. It is a seat of the diamond industry and is a prosperous trading center. During the South African War (which see) it withstood a long siege. Population, 1931, 39,500, of whom 18,400 were white.

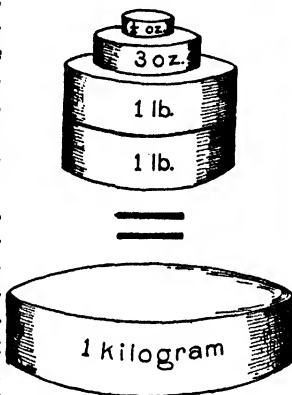


KINDERGARTEN, a word meaning *child garden*, is applied to a special kind of school for small children. The first kindergarten was established by Friedrich Froebel in 1840, and schools modeled on his are now common in most advanced countries. Interest in the education of young children is not of recent origin, and their vivid interest in life and the responsive quality of childhood has always made their training possess much possibility. The

Greeks planned for definite care of children under seven. The Romans invented methods of instruction which should tempt these beginners into paths of learning, and after the establishment of Church schools the children became proficient in many studies early in life.

Indeed, we learn of wonderful prodigies of learning during the years of the Renaissance, when three- and four-year-old children became experts in Greek and Latin and discoursed piously on many serious subjects. This, indeed, was the difficulty. The children were regarded as immature men and women and they were forced into mental processes entirely unfitted for them.

In the seventeenth century Comenius, Bishop of Moravia, instituted a reform in supplying a reading book with pictures for little children and organizing what he called the "School of the Mother's Lap." He was followed by Rousseau, Pestalozzi and many others, who all contributed to a clearer insight into the natures of young children, and to a



A COMPARISON

sympathetic planning for their needs. But it remained for Friedrich Froebel to touch the heart of the mother in the establishment of the kindergarten, or education for young children according to principles of natural growth.

For the Montessori Method, see that article.

Biographical. Friedrich Froebel was born in 1782, in the little village of Oberweissbach, in Thuringia, in Germany. His parents were in fair circumstances, his father being the village pastor, but his mother died soon after he was born and he was left to the care of servants and of his brothers.

His father married again when he was four years old, and his stepmother neglected the little Froebel. An uncle, however, adopted him, and while with him the boy received good education, affection and wise care. He needed these things very much, for he was a sensitive, affectionate, earnest boy, with a lanky, awkward body and a strong vigorous mind, with much constructive and imaginative power. Profiting by these years of good care he grew through boyhood, was then apprenticed to a forester for two years, and afterwards studied at the University of Jena. He fitted himself for work in an architect's office and was going to Frankfort to take a position of this nature, but lost his articles on the journey. Looking for other work, he was offered an opportunity to teach in the Frankfort Model School, under a fine leader, Dr. Grüner. Here he found his true vocation, and for the rest of his life devoted himself to education. He worked with Pestalozzi for two years, founded a boy's school which was most successful, lectured, taught, read, and constantly endeavored to arouse people to the necessity of a reform in education. Then he originated a school for young children, and was working out a future development of this for the schools when he died.

He lived to be seventy-one years old, was married twice, both times to interesting, thoughtful and devoted women. His life was marked by many hardships and a constant struggle with opposing circumstances; but it was distinguished throughout by a single-hearted devotion to the cause of humanity and an earnest purpose faithfully followed.

Character of Froebel's Work. His works are remarkable in their insistence on requirements for hygienic conditions, that are wholly in harmony with modern knowledge,

though written seventy-five years ago. He wrote and edited much during his long life, but his best-known works are "The Education of Man" and the "Mother-Play Book."

Froebel's educational work was first carried out with children beyond six years of age, but he gradually realized that he must begin at the beginning, and was just organizing the work for the first years, to be followed by related work for other children, when his life was closed. Therefore few people realized that the kindergarten was only the application of his principles to the beginning of education, and was to be a part of an educational procedure co-extensive with growth.

One of the First Principles. Development is one of the most important of these principles; it might be phrased as "Continuous Evolutionary Growth."

Froebel saw this as a basic principle of the world, and of man's life, bodily and mental. He applied it to method in education in every way he could. He believed that the child's activities and powers, physical, mental, spiritual, have, as plants have, a necessary and natural growth; that the tendency and rate of this growth depend on the kind of nurture supplied, as it does with plants; some being quicker, some slower, some stronger or weaker in certain qualities, so that right education means neither arbitrary control in forced directions, nor wild spontaneous growth. It means such cultivation, following what we observe of the child's needs and nature, as only patient and thoughtful people can give. He believed that such a method would give us a finer type of human beings, and would result in developing the best possibilities of which each child is capable.

Starting Point in Education. Another principle, that of Creative Activity, or Self-Activity, is a natural accompaniment of the first.

Froebel regarded the smallest active power in the child as important, as the starting point of education. Not only this, but as the spark of divine inheritance, the proof of our being God's children. "God," he says, "creates and works progressively in uninterrupted continuity." Again, "Think not, mother, that the almost infinitesimal powers of your child may be neglected. Out of least things, God created the greatest, therefore cherish and encourage your child's feeble

efforts to use his power." He persistently urges that education means the drawing forth



FRIEDRICH FROEBEL

and training of the child's spontaneous energy and activity in all right and possible directions.

Preventive of Wrong Activity. Froebel says, "There is but one sure preventive of wrong activity, that is right activity; an activity as persistent as it is fit and lawful, and that is not of the head alone, but of the head, the heart, and the body." As Col. Parker once said, "The whole child goes to school," but under old-fashioned methods it was almost a crime for a child to be active in school, and teachers would no doubt have preferred, had it been possible, to have heads there alone.

It is the natural consequence of Froebel's principles, that manual training, gymnastics, art and music—in a word, everything that trains and develops the physical nature and the emotion as well as the intellect—should form part of education.

Value of Play. Play as a valuable agency in early education was a natural conclusion from this belief in self-activity, since it was the child's earliest form of expression.

Froebel believed play to be one of the highest, most wholesome forms of human activity; partly because it is the form of activity in which little children and ordinary

people are best able to be spontaneous and creative. He thought the plays of children, if watched and studied, gave valuable hints for training them. He says, "I believe that whatever affords a child a pure (or wholesome) and persistent pleasure, is founded on a real need." In other words, that the native instincts and impulses give true information as to the powers and needs of children, though the need may often be to control and train the impulse, not to let it run wild.

It is a great mistake to suppose that Froebel thought everything which is spontaneous should be let alone. He says, "All true education should be double-sided, prescribing and following, active and passive—positive, yet giving scope." He believed that in guiding play it is possible to give a valuable social training in sympathy and cooperation, leadership and comradeship, as well as in originality.

Unity Contributes to Growth. Another principle of Froebel is generally spoken of as Organic Unity; by it is meant that as all the parts of a plant have their share in the activity which contributes to the whole growth, so should all humanity contribute, each to the benefit of all.

Froebel felt deeply the relation between all created things; he felt that men were dependent on nature, God and each other, and should be full of gratitude and helpfulness. The child should learn gladly and actively to do his share as what Froebel calls a "Member-Whole" in the world. He is to give care to animals and plants, sympathy and help to his family, neighbors and fellow-citizens, with loving obedience and gratitude to God.

In planning the kindergarten, the latest of his educational efforts, he strove to invent and suggest means for planting the germ of this idea in the minds of young children—mainly through action, for "Learn by doing" is his guiding rule. But Froebel's most urgent point is, that the child's life and education should be an organic unity, or natural whole.

As a plant or tree has root, stem, leaves, blossoms and fruit, each needing the rest for its perfect growth, so every part of life should help every other; and parents, teachers, ministers, playmates, neighbors, should have a necessary and helpful part in all children's development; as the plant grows from the moment the seed life stirs, so each day of a child's life belongs to the whole.

Froebel is most anxious that education and training for life should begin in the home; that parents should co-operate with the school, heartily, intelligently. He urges, "Come, let us live with our children," meaning, let us share their play and have them share our more serious pursuits, let us enter into the spirit of childhood, and so learn how to teach children.

Plan of the Kindergarten. In his kindergarten, or child-garden, he plans for something of the order and grouping of the community-action of the school; and with this, some of the training in language and manners, the play and exercise of the senses, the moral training, the free movement and the happiness of a good home.

The games are simply physical exercises, the preliminary to gymnastics; the hand work is the beginning of manual training; the songs, stories, verses and conversations are the beginning of literature, nature study, civics, and moral teaching; the touch, ear, eye and mind are made more alert and ready for the work in reading and writing; the experiments with simple objects in concepts of number, measurement and color are a basis for science and arithmetic; while the child's love for his home and his parents, and his duties to them as well as to teachers and playmates, are emphasized.

First Training in the Home. Training, that is, seeing the right thing is done over and over again until it become a habit, is especially the office of the home; for the younger we are, the more plastic we are in forming habits. Every day that a garment lies folded makes the crease deeper; so every time we act a certain way, the habit gets more set, and every day a child is not forming good habits he is forming bad ones, for the wrong way becomes more set, if the right does not. (See James' *Talks on Psychology*, Chap. VIII.)

So a child should carry with him from home to kindergarten habits of obedience, cleanliness and politeness and the habit of attending when he is spoken to. Above all, he should have the habit of happiness and good humor. For this is habit, too, and can be made natural to a child, especially by example at home; for young children learn more by imitation than any other way. If in addition the child has become interested in observing what he sees, has heard some pleasant childish rhymes and stories, and has

been given toys such as he can arrange, take apart and put together by himself, not mechanical ones, he will enter easily into kindergarten activities. One warning must be given; neither home nor kindergarten must push or overstimulate growth. It must never be hurried.

References. In the references given there is no attempt at a complete list of Froebel's statements on any point or principle of education; a few only of the most definite statements on each subject are mentioned, with a few similar or related views from other educators and psychologists.

See *Education of Man*, pp. 8, 17, 27, 194, 328, and *A Study of Child-Nature* by Elizabeth Harrison, chapter on "The Training of the Intellect." Froebel's *Mottoes and Commentaries on Mother-Play*, pp. 106, 199, 307. James' *Talks to Teachers*, Chapters VI, VII, X, XI, pp. 123, 146, 147, 235, 241. *Education and the Larger Life*, C. Hanford Henderson. *Essay on Child's Play*, R. L. Stevenson. *Love and Law in Child-Training*, Emilie Poulson.

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The Relation of Child Training to Natural Impulses and to Habits

Habit. We are all, as Professor James says, bundles of habits; Americans prefer chairs to sit upon because it is their habit to do so; that is, they have done it every day of their lives since infancy and have done it thousands of times; their muscles and nervous system are set in the habit, which makes it a discomfort to sit on the floor, as the Japanese do. With the latter it is just the reverse; and in early childhood it is possible to make either habitual.

Going to bull-fights and seeing wounds and blood without distress has become habitual to many Spaniards; traveling on skates for long distances without fatigue has become habitual to Dutch peasant women; carrying baskets on the head, to West Indian women. Neglected children in the street get the habit of swearing; well-cared-for children get the habit of being shocked at bad language.

Behavior Patterns. Even when a child is born, he has an elaborate system of ways of behaving. These are now called "behavior patterns" rather than instincts. This is because the word instinct had mysterious implications which caused needless argument and disagreement. Modern psychologists like to use words which have definite meanings on which everyone agrees. There are patterns of feeding, sleeping, crying, clapping, blinking, movements of arms and legs and head. These are not very well defined at birth but rapidly become more definite and certain with exercise and growth. They are not much alike in different babies, but are very similar in twins.

Often these behavior patterns seem to be just random movements without plan or purpose. Yet Dr. Gesell of the Yale Clinic of Child Development says that they are really ordered and consistent in their development. "The random behavior of an eight-weeks-old infant is characteristically different from that of a four-weeks-old."

These behavior patterns have been studied very carefully, so that it is known what abilities a child should have developed at each age, and what his normal reactions to his environment, to himself, and to other people should be. Some children, of course, develop rapidly, others so slowly that they are almost grown up before they have reached beyond the early stages. But there are averages with which each child can be compared. It is important to know these, for serious emotional disturbances result if a child is forced too fast or if he is not given enough opportunity to use his powers. Development of the child can best be modified and controlled by using natural patterns as a basis.

"The Mental Growth of the Preschool Child," and "Infancy and Human Growth" are two books by Dr. Arnold Gesell which describe the behavior patterns typical at each age.

The Child's Natural Impulse. A child's natural impulse is toward activity of some kind; it depends largely on its surroundings, parents and playmates, which direction its activity in action, speech or thought shall take, and into what habits it will crystallize. A scolding mother, who allows her children to imitate her tone and words to brothers and sisters, trains them in the habit of scolding; a mother who caresses and

speaks gently, and reminds her children to do so, forms gentle habits in them. A mother who insists that her children shall wash their hands and faces before meals trains them to the habit.

"We must make automatic, as early as possible, as many useful actions as we can, and as carefully guard children against growing into disadvantageous ways; we are bundles of habits, imitators and copiers of ourselves." (James.)

Tendency Towards Activity. Froebel is constantly urging in his "Mothers' Book," or *Mother-Play*, that children naturally tend toward activity, therefore we must show them wholesome actions and let them practice them; that they tend to imitate, so we must watch ourselves and teach them to imitate good things. They wonder, are curious; so we must give them interesting and worthwhile things to notice; they like to handle, take apart, and put together; therefore give them materials with which to work.

I will quote again on this subject from James, the great psychologist:

"Constructiveness is another great instinctive tendency. The more different kinds of things a child gets to know by treating and handling them, the more confident grows his sense of kinship with the world; the wise education from the kindergarten up takes the tide at the flood, and devotes the early years to training in construction and object teaching."

When to Develop Instincts. It is now known that certain instincts appear at certain times of life and if not used and trained then, may fade and become useless, or almost so. The child's tendency to handle and construct is one of these. One of Froebel's merits is that he seizes the right time to train the child's senses and instincts. It is found in training the blind that the finger tips seem to lose some of their sensitiveness after a person is six or seven years old, and that those taught later are not so quick to learn. Manual work, the sense for color, etc., are things to be begun early.

Description of the Kindergarten

Attractive and Pleasant. A kindergarten is so pleasant a place that at first one can hardly believe it is for anything but a playroom. The walls are generally of a soft tan, green or grey, with plenty of pictures; there are flowers in jars and plants in pots: there

is a piano and a sand-table; and the furniture is just right in size for the small persons who use it. There is generally a globe of goldfish, and sometimes another with tadpoles, snails, or curious sea creatures in it; there may be a glass box, or a terrarium, where caterpillars and butterflies or toads and beetles live; indeed, any pet which can properly be kept indoors may be found in a kindergarten, and wherever it is possible, there is something of a garden outside.

When the children come in, one sees that the small people have responsibility as well as pleasure; from four to six years old, they hang up their hats and wraps neatly, the hooks being well within reach; each child should have his own locker, a space at the top for individual projects or valued toys and a box below for rubbers; then, while some play in the screen playhouse, others help on committees appointed beforehand, with such work as caring for pets, dusting, etc. One group or certain individual children may go at once to the lockers, and bring out the project upon which they may be working, others may play upon the large room-apparatus, as merry-go-round, slide, or walking boards.

Plans and Projects. The particular word, project, is of small consequence; the idea back of the word is the important element. The term refers to any unit of purposeful experience, any instance of purposeful activity where the dominating purpose (1) fixes the aim of the action, (2) guides its process, and (3) furnishes its drive.

Dr. Kilpatrick of Teachers College distinguishes four types of life experiences.

The first type represents those experiences in which the dominating purpose is to do or to make in material form. The material of which the thing is made may vary from clay, wood, cloth, paints, a poem or a prayer.

The second may be defined as one which involves purposeful enjoying and appropriation of an experience. If the purpose guides the action of seeing or hearing, the experience is a project of the second type.

The third kind of a project, Kilpatrick considers, is one in which the dominating purpose is to solve a problem, to unravel an intellectual entanglement. The solution of problems has a technique of its own. There must be, however, in the third type a felt difficulty and a purpose to solve this problem.

The fourth type includes experiences in which the purpose is to acquire some degree of knowledge or skill. It is a desire to fix in memory a point of view and to make it effective later.

Projects may arise in connection with topics but a topic as such is not a project.

Not all the child's purposes will be accepted by the teacher for not all purposes are educative or valuable, and therein lies one difficulty attending the use of the project method.

The teacher must set the stage and control the situation so that valuable purposes are likely to be proffered.

A plan or project may develop among a few children, upon which the entire group should pass judgment; then, a town meeting may be called, all the children assemble, the plans drawn upon a large sheet of paper and suggestions for furthering the development of the project.

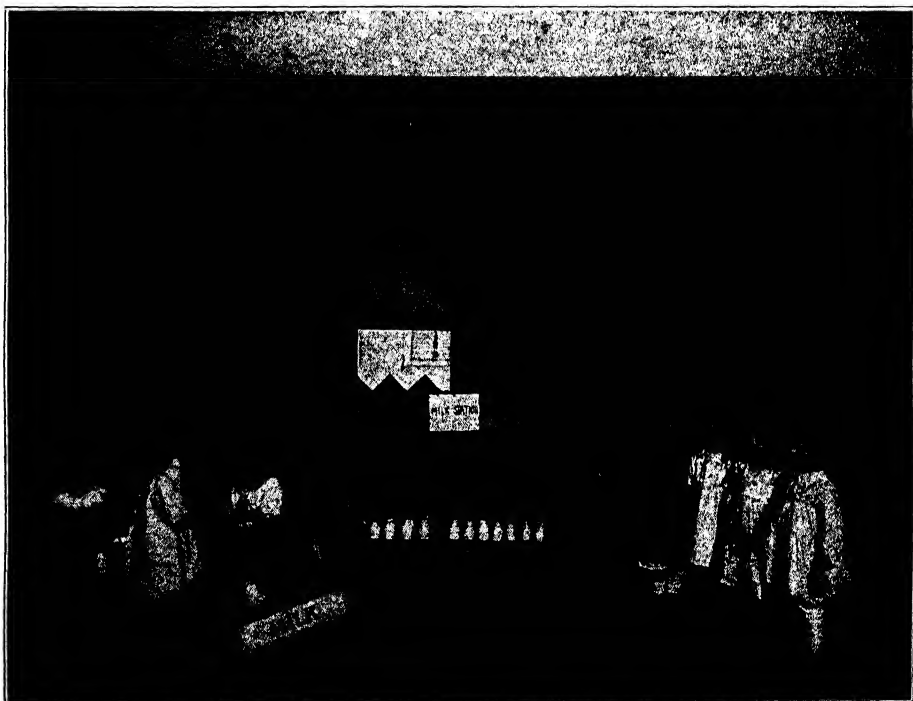
Christmas may be at hand and toys of varied sorts are being worked out by a few children; the need of a toy store may hence be the cause of the town meeting. The large floor blocks are brought into use and a store is built which is large enough to really enter. Through a question from one child a play is developed; "Do toys come to life?" One answers, "They may!" Thereupon is based the plot of the play. The children work out their own rhythms for the most popular toys, such as dancing teddy bears, paper dolls, walking dolls that say ma-ma, jumping jacks, tin soldiers, Raggedy Ann, etc.

Costumes are needed, materials and styles talked over, and patterns made.

The orchestra practices on instruments which do not play a tune; the orchestra members cut and make their own coats and caps (every costume very simple and made of paper cambric, cheese cloth and crepe paper).

A happy month or more is spent and gone before we know it. The wheelbarrows, carts, engines, hammocks, boats, etc., mean a thousand times more and give much joy to little ones less fortunate, if presented by the little maker.

On certain days, walks may be taken to the parks to notice birds, etc., or to see a market, a blacksmith shop, an engine-house; the conversation afterward helps the little ones to understand how other people work for their comfort and protection, though only



KINDERGARTEN OCCUPATIONS

1. Children making a garden in vacant lot near the school
2. Typical play-store project, worked out by the children

the simplest of such experiences are used. Sometimes when pictures of the cow and the farmer are the topic, the children make a little butter in a toy churn or glass jar, so as to get a little way toward understanding some steps of the wonderful process in which nature's forces, man's labor and Providence work together to provide food and convert it into our growth and strength. They learn to follow the course of the seasons; to notice the provision birds and animals, as well as human beings, make for their young and against the weather; and to trace all gifts and all power back to the love of their Heavenly Father. Of course, some of this can be done at home; but neither so systematically, nor, as a rule, with so much training in habits of attention, as when with other children. There are many interruptions at home, and too great attention is paid by the adults to the one or two children.

In kindergarten each must behave well, and attend, because it is the law for the whole group; the attitude is, "We are all partners, we can all make pretty things for the room, we must all do our share in taking care of things; we must take turns in talking, in choosing games or stories; no one must be too noisy, or too pushing, because it prevents others hearing or seeing, or having a good time." The discipline is on this basis; if anyone should spoil another's work, the children will tell you, he must put it right again or give his own piece of work to the other child; if anyone is unkind and makes his neighbors uncomfortable, he must sit by himself until he can be pleasant again. "There is one law of right for all, which both you and I must obey," is Froebel's principle.

Equipment for Kindergarten

MAY BE USED ON SMALLER SCALE FOR HOME

I. Furniture, Cupboards, etc.

Movable furniture, desks or tables or both and chairs.

Teacher's desk. Piano.

Low cupboards with ample shelf space.

Good sized store room.

A cork bulletin board.

A few suitable and beautiful framed pictures.

An aquarium.

Provision for keeping rabbits, birds, etc., for a few weeks or longer.

Mother Goose, etc.

II. Play Apparatus and Toys.

1. APPARATUS.

Swing. Seesaw.
Slide. Walking board.
Climbing rope.
Swing rope with rings.

2. BALLS.

1 Basket ball—13 inches.
6 Rubber balls—6 inches.
6 Rubber balls—4½ inches.

3. HOUSEKEEPING TOYS.

1 Screen playhouse, 5 part screen with door and windows.
4 Dolls and clothing.
1 Doll bed and bedding.
1 Doll buggy. 2 Laundry sets.
1 Stove and cooking utensils.
1 Set dishes.
Broom, dust pan, etc.

4. GARDEN TOOLS.

5. TOYS FOR STORY ILLUSTRATION.

1 Set Billy Goats Gruff; Candoit Co., Denver, Col.
1 Set Three Bears.

6. BAND INSTRUMENTS.

3 Triangles. 1 Drum.
1 Tambourine. 4 Bells.
1 Cymbals.

7. MISCELLANEOUS.

1 Wagon—3 ft. long. 2 Trains.
1 Kiddy Kar. 4 Reins.
6 Bean bags. 1 Ring toss.
2 sets Veeder toy animals.
Toy trees, picture puzzles, animals.

III. Building Materials.

1. FLOOR BLOCKS.

150 Blocks 3x6x12 inches,
100 Blocks 3x6x6 inches,
50 Blocks 3x3x12 inches,
25 Blocks 6x6x6 inches,
25 Blocks 6x6x6 divided diagonally,

To be cut in shop or mill.

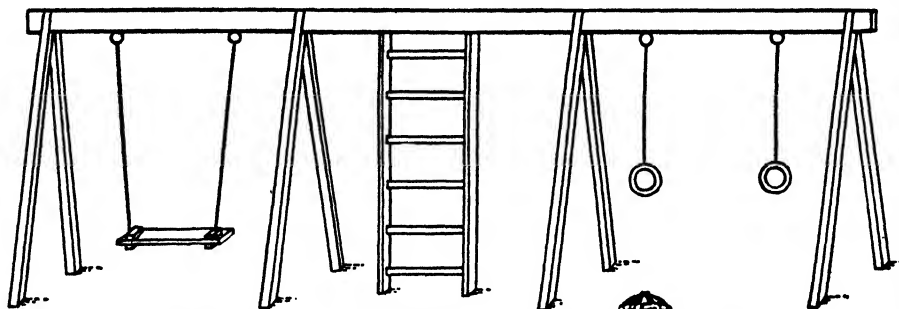
40 Boards 3x1x18
40 Boards 3x1x24
20 Boards 3x1x30
20 Boards 3x1x36
12 Boards 72x1x10

To be cut in shop or mill or 1 set Patty Hill Blocks, Schoenhut Co., Phila., Pa.

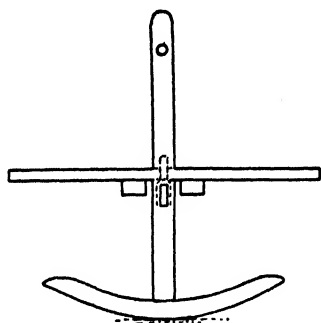
2. FROEBELIAN BLOCKS.

12 Enlarged fifth gifts.
12 Enlarged sixth gifts.

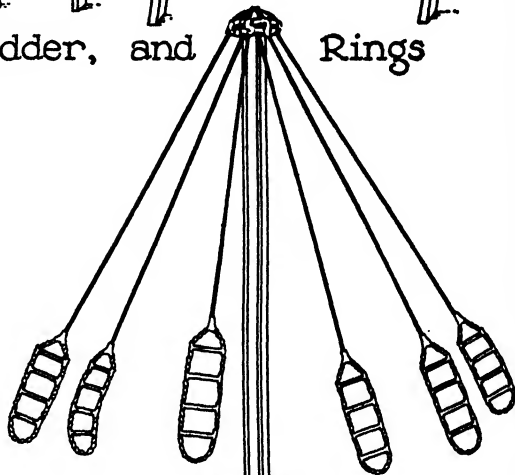
3. HEAVY BINDER BOARD FOR ROOFS AND SHELVES.



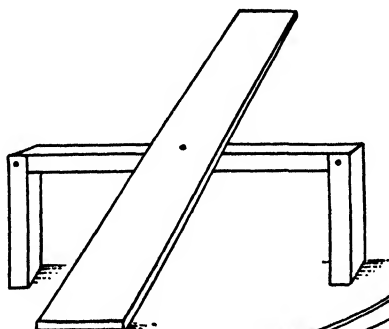
Swing. Ladder, and Rings



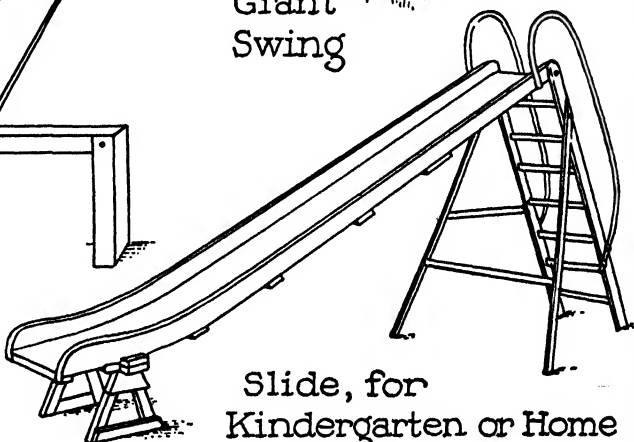
Rocking Board



Giant
Swing



Teeter
Board



Slide, for
Kindergarten or Home

HEALTH PLAY-EXERCISE DEVICES
Suitable for School or Home

IV. Materials for Construction and Drawing.

1. MODELING.
Sand table. Clay. Plasticene.
2. PAPER CONSTRUCTION.
Unprinted newspaper.
Manila paper. Drawing paper.
Colored construction paper.
Bogus paper. Tissue paper.
Crepe paper. Strawboard.
Chip board. Paper dolls to dress.
Scissors. Library paste.
Paper fasteners.
Water colors and brushes.
Wax crayons. Drawing pencils.
Chalk. Rulers.
3. WOODWORKING.
Wood bench. Saws.
Hammers and nails. Sand Paper.
Glue. Soft wood.
4. SEWING AND WEAVING.
Cotton goods. Thread and needles.
Pins. Small dolls to dress.
Jute, Angora, Raffia for weaving.
5. MISCELLANEOUS MATERIALS.
Beads, seeds, etc. for stringing.
Milk-bottle top. Button moulds.
Empty spools. Ribbon bolts.
Pasteboard boxes. Butter boats.

Kindergarten Games

The Necessity for Play. Gross says that young creatures do not play because they are young, but they are young because they must play, in order to be well fitted for the energy and effort required in later life; so, mothers, above all things, plan that your children may have place, time and companions for play—for it is a dismal thing to play all by one's self.

Find a Place for Play. But how are we to find a play place if we live in cities and in small modern houses or flats? If it is not possible to give up a room to the children, have one room where there is as little unnecessary furniture as possible, and where what there is can be moved into corners and put out of the way, for at least part of the day. Have a straw rug to spread on the floor and a large cupboard where the playthings are kept. If there is a gallery or balcony which can be glassed in or screened in with canvas, for fine weather, or any place out of doors, where a playhouse can be put, it is better than

having the children indoors. This playhouse may be made of dry-goods or packing boxes, papered with wall paper appropriate for each room, furniture made of orange crates, etc., and the outside covered with tar paper. This solves the problem of keeping the children out of doors and physically, mentally busy and happy.

Recommended Games. Froebel's games are of many kinds: Ball games, "sense-training" games, partner games, where the children skip or dance by twos, "courtesy" games, where bowing, or some other expression of pleasure in meeting is the point. Running, hopping, chasing, all kinds of childish activity—marching as soldiers, playing at "blacksmith" or some other of the many imitations of workmen which children love; and animal games, not only playing "horse," but any animal or bird in which the children are interested. All these are included. The triple value is, first, that the child's attitude towards his playmates must be just and fair, "taking turns" in leadership or in following; second, that a large and varied series of physical activities exercise his body and limbs, with the happy feeling of play rather than drill, and last, that the spirit, especially of the "representative" games, is one of loving, kindly recognition, of the helpful attitude of persons and things towards him, and a better understanding of them. However, most of these games require a large group of children; only the "finger games," ball games, and "sense" games can be well played at home or with very few children.

Finger-games have been played by mothers with little ones, almost since history began.

"Here are Mother's knives and forks;
"Here is Mother's table;
"Here is Mother's looking-glass, and
"Here's the baby's cradle."

This teaches a child to separate his fingers and close his whole hand in different ways; thus getting control of it; while the little "story" of home life gives meaning to it.

"Pat-a-cake, baker's man," and "Pittypatty polt, Shoe the wild colt," call the child's attention to activities of people about him.

The best series of finger-plays, with directions for playing, is by Miss Emilie Poulson.

Sense Games. These are easily played at home, and from one to any number of children can play them. They are used to exercise and make alert the five senses, and

are extremely important for backward children.

For Touch: The child shuts his eyes or is blindfolded, and something is put in his hands that he may guess the name by handling. If the guess is right, the playmates clap. The value of this game can be increased by giving things which contrast with each other in some point, successively or on different days; or several objects connected with some one occupation, or with some experience, such as a visit to the park.

For Hearing: As before, the child is blindfolded and listens to sounds, guessing them; the voice of someone behind him, the sound of metal, wood rapped, paper rustled, stamping on the floor, water being poured, a bell tinkled, etc.; the window may be opened and the child asked to tell a sound that he hears. Voices may be disguised by letting the children speak very high or low, sing, or imitate the cat, dog, etc.

Tasting: The tastes should be contrasted and given in connection with different occupations and interests. Froebel intended warnings against hurtful food and unripe or over-ripe fruit to be connected with this game.

Smelling: The scents of flowers, fruit, herbs, etc., are to be distinguished; with very young children, only two or three very familiar flowers should be used at first; when the mother takes her turn, she will be surprised to find how hard it is to recognize scents or tastes with eyes shut.

Seeing: The best form of this game is to choose some familiar object, such as a toy, then let the guesser turn his back or leave the room, while it is put in some unusual place, which his "sharp eyes" are to find, when he returns; or some familiar thing may be hidden, and he must tell what is gone. This is too hard for very young children, until they have been used to see others play the game. Songs accompany the games.

Story-Telling

A Powerful Factor. Froebel makes stories a necessary part of education; and who that recalls his own childhood does not remember the delight of hearing stories?

It is a powerful means of influencing children, for the story seizes on the child's imagination, and the vividness with which he pictures it aids his memory in retaining it. Moreover, the happy recollection of the

"Story-hours," by the natural process of association, lends an additional charm to the time, the place and the person to whom the memory is due. It is a means to strengthen the bond with home and with family affections and influences.

Story-books in plenty there are now, but the story read can seldom hold the attention of a young child as well as that where the eye and tone make a direct appeal to him.

If short stories are told at first, the child will be sure to ask for them over and over, and even if the story-teller has not a good memory, the practice and repetition will quickly improve it.

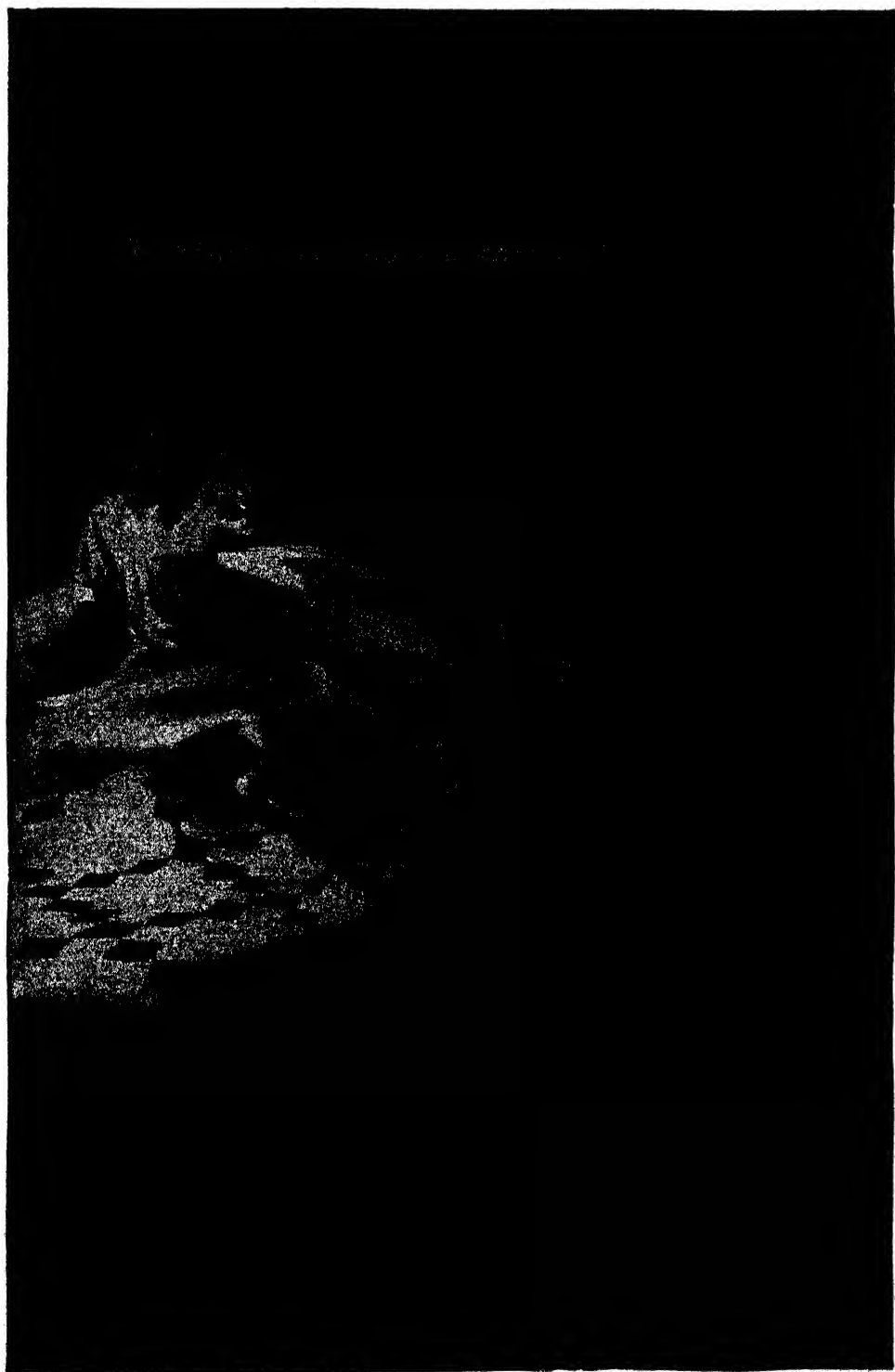
Nursery Rhymes. Children of three and four years old like nursery rhymes best, such as "Mother Goose", and the relation of simple incidents which have happened to themselves. The visit to grandmother's; the walk in the park; going to the zoo and seeing the animals; the birthday, etc. If courage is lacking to originate the composition of these, the "Arabelle and Araminta" stories, and the Reggie and Roggie stories, by Gertrude Smith, are excellent models, until confidence is gained. The recall of small details, which means so much to the small person, in whose life the experience was a great event, must be practised.

After the first story has been told, and the story-teller has seen the bright eyes dance with pleasure and has heard the eager little voices say, "Tell it again," she or he will be glad to try it often.

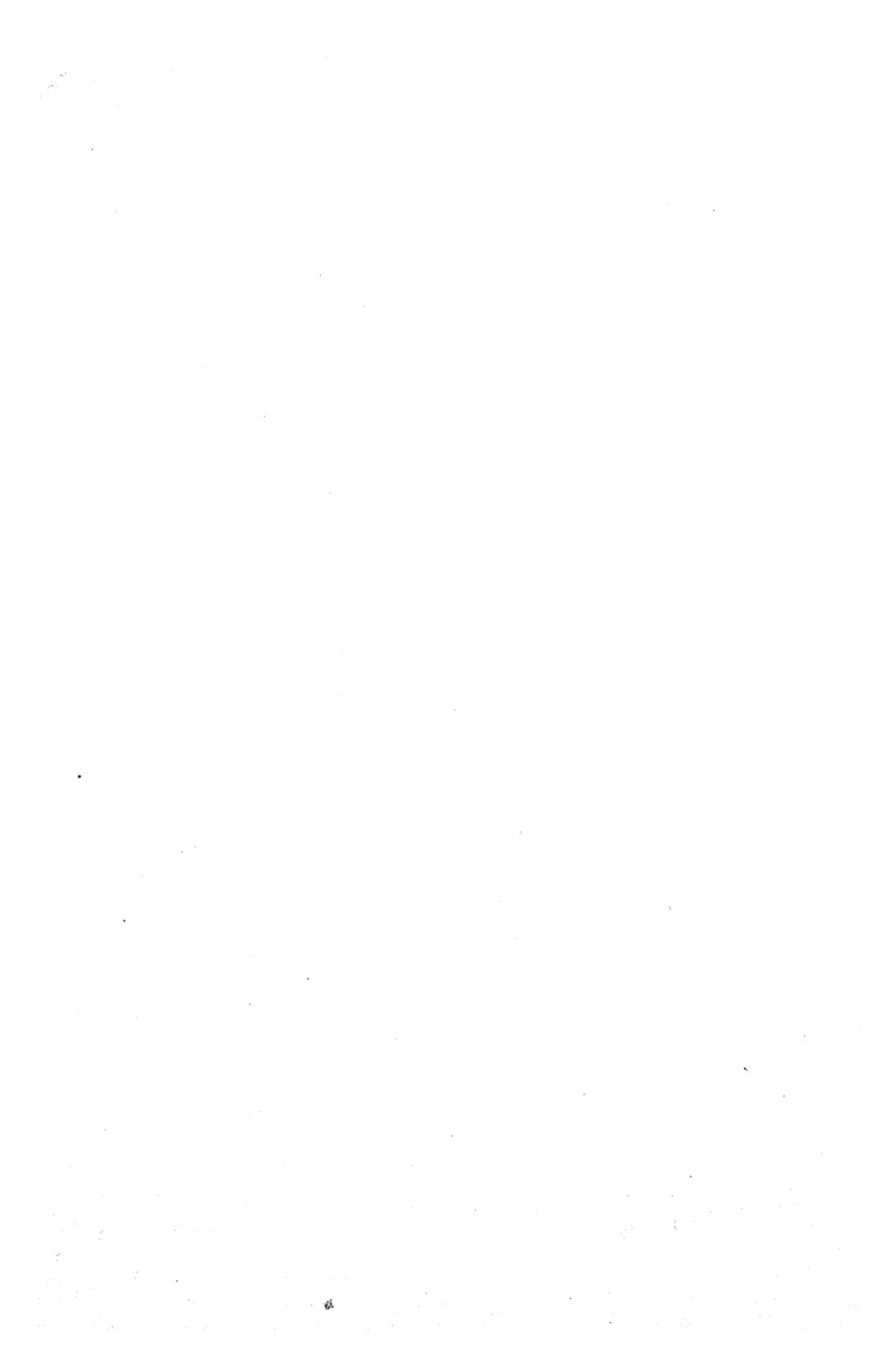
With Dramatic Effect. The stories should be short, definite and bright; as far as possible they should be told dramatically; in *The Three Bears*, for instance, it is important to give the big, gruff voice of the Big Bear, and the tiny voice of the Little Bear, even with exaggeration of tone.

It is, of course, not desirable to emphasize ideas which are unwholesome for a child; but the occasional tragic death of the bad character in the old classic tales, or even a seeming tragedy for the good hero, who is sure to come out right in the end, is not to be eliminated. Virtue rewarded and vice rebuked, in strong contrast, are characteristic of primitive tales and primitive states of mind. It is the general result, not the particular feeling, which a child holds in mind.

Kinds of Stories. Children are generally ready for fairy tales when about five years old. Imagination is active and needs food;



"SOMEBODY HAS BEEN SLEEPING IN MY BED—AND THERE SHE IS!"



wonder is alive, and has a needful part to play in rousing thought and fancy. A child needs the contrast of the new and the familiar, the strange and the natural.

Animal stories are always loved and Bible stories never fail in their charm, if begun early and followed out continuously. Froebel warns us not to explain or urge the moral of a story, but rather to tell it so earnestly and often that it makes a deep impression, and the child will gradually realize the moral ideal.

It adds much pleasure when the incidents or characters can be reproduced by drawing or paper cutting, and they may also be dramatized by the children, at times; it is best to wait for this till they show inclination to do it. Stories should give good standard and ideals in language as well as in thought, and should not be too much simplified.

The Three Bears

Once upon a time there was a little girl named Goldilocks, who lived with her mother

were good bears, and never thought that anybody would touch what belonged to them.

Now, when Goldilocks saw the door open, she thought she would go in and rest for a while. So she went in, and on the table she saw the three bowls of porridge; a big bowl for the big father bear, a middle-sized bowl for the middle-sized mother bear, and a little tiny bowl for the little tiny boy bear. Goldilocks was very hungry, so she tasted the father bear's porridge, but it was too hot, and she burned her mouth. Then she tasted the mother bear's porridge, but that was too cold, and then she tasted the little boy bear's porridge, and that was so good that she ate it all up, and left none for the poor little bear.

Then she went into the parlor, and there she saw three chairs; a big chair for the big father bear, a middle-sized chair for the middle-sized mother bear, and a little tiny chair for the little tiny boy bear. First she sat down in the father bear's chair, but that was too high; so she got out of that and sat down in the mother bear's chair, but that was too low. Then she sat down in the little boy bear's chair, and that was just right. But she jumped up and down in it, so that at last she knocked the bottom out of it,



"SOMEBODY HAS BEEN EATING MY PORRIDGE," SAID THE LITTLE TINY BOY BEAR.

near a great wood. One morning Goldilocks ran out into the wood without asking leave from her mother, and she ran on and on and on, till she became very tired. At last she saw a little house. Now in this house three bears lived, a father bear, a mother bear, and a little boy bear. That morning the mother bear had made porridge for their breakfast, but it was too hot, and while it was cooling they went out for a walk in the wood. They left the door of their house open, for they

and the poor little boy bear's chair was broken.

Then she went up stairs, and there she saw three beds; a big bed for the big father bear, a middle-sized bed for the middle-sized mother bear, and a little bed for the little boy bear. Goldilocks was very tired by this time, so she thought she would lie down and take a nap. First she climbed into the big father bear's bed, but that was too hard; then she got into the middle-sized mother

bear's bed, but that was too soft; at last she got into the little boy bear's bed, and that was so comfortable that she very soon fell fast asleep.

Now the bears came home and they went into the kitchen to eat their porridge.

"Somebody has been eating my porridge," said the big father bear in his big, rough, gruff voice.

"Somebody has been eating my porridge," said the middle-sized mother bear in her middle-sized voice.

"Somebody has been eating my porridge," said the little tiny boy bear in his little tiny voice, "and has eaten it all up." And the poor little bear began to cry.

So they went into the parlor next, and there they saw the three chairs which were pushed out of their places.

"Somebody has been sitting in my chair," said the big father bear in his big rough, gruff voice.

"Somebody has been sitting in my chair,"

at her, and remembered how naughty she had been, she was very much frightened; she jumped out of bed and ran down the stairs as fast as ever she could, and she ran straight home to her mother. And after that she never went out into the woods without asking her mother first, and she never went into anybody's house, or used anybody's things, without asking leave.

The Three Tiny Pigs

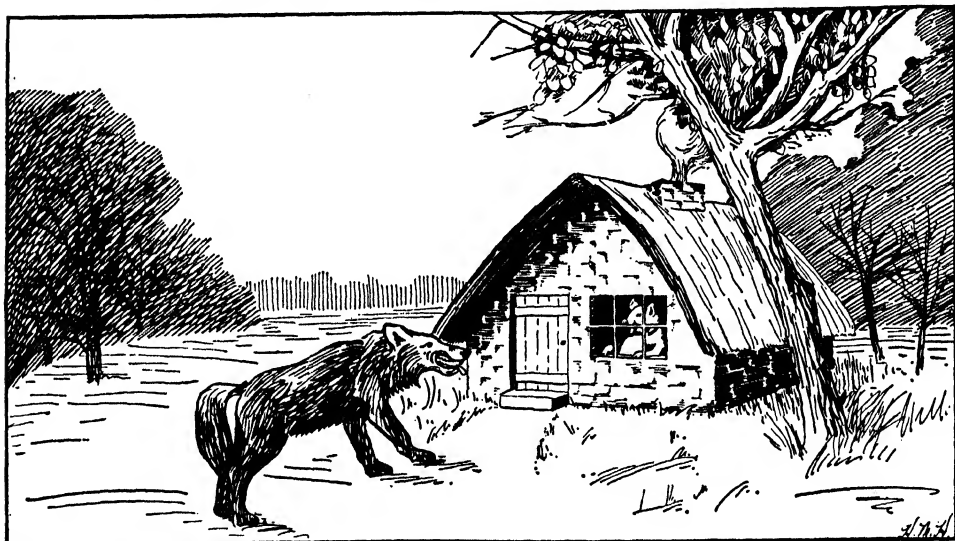
Once upon a time there were three tiny pigs, and they went out to seek their fortune. The first little pig met a man with a bundle of fir-branches, and he said:

"Please, man, give me some firs to build a house with, because I have none to live in."

So the man gave him some firs, and he built a nice house. But presently the wolf came along, and he knocked at the door, and said:

"Tiny pig, tiny pig, let me come in." But the pig said:

"No, no, by the hair on my chinny-chin-



"TINY PIG, TINY PIG, LET ME COME IN"

said the middle-sized mother bear in her middle-sized voice.

"Somebody has been sitting in my chair, and it's all broken," said the poor little tiny boy bear in his little tiny voice.

Then the bears went upstairs.

"Somebody has been lying in my bed," said the big father bear in his big rough, gruff voice.

"Somebody has been lying in my bed," said the middle-sized mother bear in her middle-sized voice.

"Somebody has been lying in my bed," said the little tiny boy bear in his little tiny voice, "and here she is."

Now, when Goldilocks heard the voices of the three bears, she woke up. And when she saw them all by the side of her bed looking

chin." Then said the wolf: "I'll huff and I'll puff and I'll blow your house in." So he huffed and he puffed and he blew the house in, and he ate up the tiny pig.

The next little pig met a man with a bundle of sticks, and he said: "Please, man, give me some sticks to build a house, for I have none to live in." So the man gave him some sticks and he built a house. Presently the wolf came along, and he knocked at the door and he said: "Tiny pig, tiny pig, let me come in." But the pig said: "No, no, by the hair on my chinny-chin-chin." Then the wolf said: "I'll huff and I'll puff and I'll blow your house in." So he huffed and he puffed and he blew the house in, and he ate up the tiny pig.

The third little pig met a man with a load of bricks, and he said: "Please, man, give me

some bricks to build a house, for I have none to live in." So the man gave him some bricks, and the pig built a nice, strong house, with a door and a window and a chimney. Presently the wolf came along, and he said: "Tiny pig, tiny pig, let me come in."

But the pig said: "No, no, by the hair on my chinny-chin-chin." Then the wolf said: "I'll huff and I'll puff and I'll blow your house in." So he huffed and he puffed, and he huffed and he puffed, and he huffed and he puffed, but he couldn't blow the house in, for it was too strong. Then he said: "Tiny pig, I know where there is such a nice field of turnips, and if you like, I'll take you there to get some."

"Where is it?" said the pig.

"Down at Mr. Brown's farm," said the wolf.

"I'll come for you tomorrow morning."

"What o'clock?" said the pig.

"At five o'clock," said the wolf.

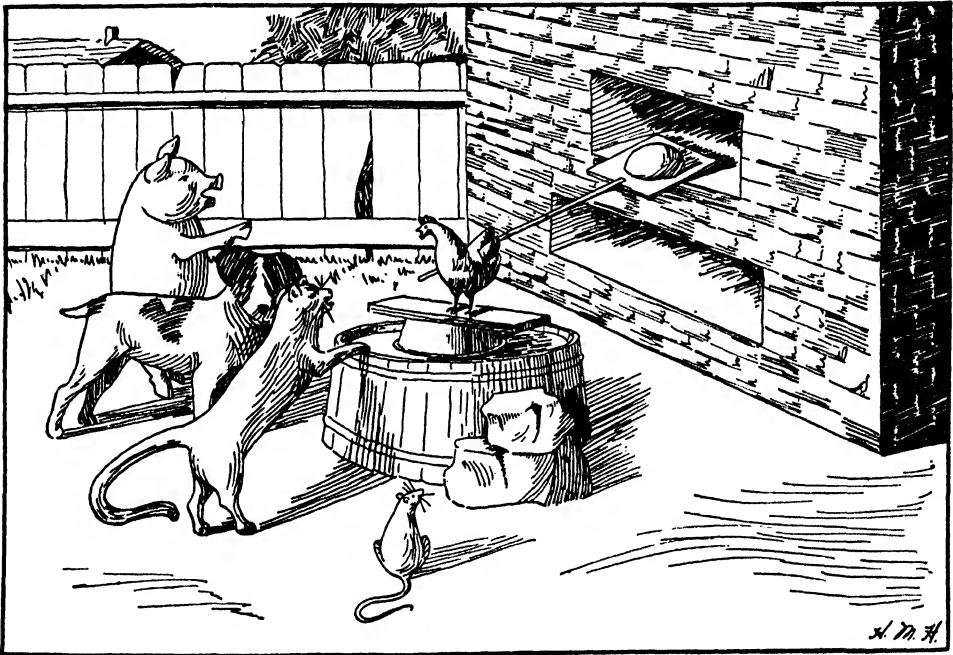
So the pig got up at four o'clock, and went down to the garden and gathered the pears. But they were so nice that he began to eat some while he was up in the tree, and presently he saw the wolf coming. He was very much frightened, but he called out to the wolf: "I'll throw you down some pears," and he threw them a very long way off. Then, while the wolf was running to get the pears, the pig scrambled down from the tree and ran home as fast as he could.

Then the wolf came back to the pig's house, and said: "Tiny pig, there is a fair at Merrytown tomorrow, and if you like I'll come and go with you."

"At what o'clock?" said the pig.

"At four o'clock," said the wolf.

So the pig got up early, at three o'clock, and went to the fair at Merrytown. There he



"WHO'LL EAT THE BREAD?" SAID THE LITTLE RED HEN

"At six o'clock," said the wolf.

So the pig got up very early, at five o'clock, and went to Mr. Brown's farm; he got a nice bag of turnips and carried them home. Then the wolf came along and said: "Tiny pig, are you ready?"

"O," said the pig, "I went long ago and brought the turnips home." Then the wolf said: "Tiny pig, I know where there is such a nice pear-tree."

"Where is it?" said the pig.

"In Mr. Sweet's garden," said the wolf, "and if you like, I'll come and take you there tomorrow morning."

"At what o'clock?" said the pig.

bought a nice new churn, and he set out for home very soon, for fear of the wolf coming. Just as he got to the top of a long hill he saw the wolf at the bottom, so he got into the churn and it rolled over and over and over, down to the bottom of the hill. The wolf was so frightened when he saw it coming that he turned around and ran to the woods as fast as he could, and after that he never bothered the pig any more.

The Little Red Hen and the Grain of Wheat

Once upon a time there was a little red hen, who was scratching and scratching in the ground to get her living. And one day she

found a grain of wheat, so she thought she would plant it and have more wheat.

"Who'll help me to plant it?" said the little red hen.

"Not I," said the cat.

"Not I," said the rat.

"Not I," said the dog.

"Not I," said the pig.

"Then I'll plant it myself," said the little red hen. So she planted it. Then she planted more. And by and by the wheat grew up. And then it was time to cut the wheat.

"Who'll help me to cut the wheat?" said the little red hen.

"Not I," said the cat.

"Not I," said the rat.

"Not I," said the dog.

"Not I," said the pig.

"Then I'll have to cut it myself," said the little red hen. So she cut it down, and then it was ready to be threshed.

"Who will help me to thresh the wheat?" said the little red hen.

"Not I," said the cat.

"Not I," said the rat.

"Not I," said the dog.

"Not I," said the pig.

"Then I'll thresh it myself," said the little red hen. So she threshed the wheat. And then it had to be taken to the mill to be ground.

"Who'll help carry it to the mill?" said the little red hen.

"Not I," said the cat.

"Not I," said the rat.

"Not I," said the dog.

"Not I," said the pig.

"Then I'll carry it myself," said the little red hen. So the wheat was ground into flour at the mill. And the little red hen carried it home. And then it was to be baked into bread.

"Who'll help make the bread?" said the little red hen.

"Not I," said the cat.

"Not I," said the rat.

"Not I," said the dog.

"Not I," said the pig.

"Then I'll bake it myself," said the little red hen. And by and by a nice round, brown, crusty loaf came out of the oven.

"Who'll eat the bread?" said the little red hen.

"I will," said the cat.

"I will," said the rat.

"I will," said the dog.

"I will," said the pig.

"I will eat it myself," said the little red hen. So she carried the loaf down to the corner of the barnyard, where all the other little red hens were, and they all had a fine dinner. But the cat and the rat and the dog and the pig had none of it.

The Two Green and Glittering Gold-Chafers

A gold-chaffer is a very bright beetle with a shiny back.

Once there were two green and glittering gold-chafers. They were very young, and they lived in a beautiful garden, full of sunshine and flowers. One day, as they played in

the sunshine, the first green and glittering gold-chaffer said to the second one:

"Let's play tag."

"Yes," said the second green and glittering gold-chaffer, "you run and I'll tag you."

"No," said the first one; "you run and I'll tag you."

But they could not agree which should run first, and so they couldn't play tag.

"Let's play hide and seek," said the second green and glittering gold-chaffer.

"Yes," said the first one; "I'll hide and you find me."

"No," said the second one; "I'll hide and you find me."

And they couldn't agree which should hide and which should find, and so they couldn't play hide and seek.

Then they saw two beautiful dragon-flies dancing over the pond in the garden. One was a green dragon-fly and one was a blue dragon-fly.

"Let's dance with the dragon-flies," said the first green and glittering gold-chaffer.

"Yes," said the second one: "I'll dance with the green dragon-fly and you dance with the blue one."

"No," said the first green and glittering gold-chaffer; "I'll dance with the green dragon-fly and you dance with the blue one."

And they couldn't agree which should dance with which dragon-fly, and so they couldn't dance.

And they were not having a good time, though the sun was shining and the flowers looked beautiful and everything else was having a good time.

Then a very old green and glittering gold-chaffer came by, and he listened to what they were saying. He walked on, but he turned his head over his shoulder and looked back at them, and he said: "Silly, silly, silly. Don't you two young ones know that the only way to have fun is to take turns?" And they had never thought of that.

So the first green and glittering gold-chaffer ran and the other one tagged him, and then the second green and glittering gold-chaffer ran and the first one tagged him. And they had a lovely time. Then they played hide and seek. The second green and glittering gold-chaffer hid and the first one found him, and then the first one hid and the second green and glittering gold-chaffer found him. And they had a lovely time playing hide and seek. And then they danced. The first green and glittering gold-chaffer danced with the green dragon-fly and the second one danced with the blue dragon-fly, and then the second green and glittering gold-chaffer danced with the green dragon-fly and the first one danced with the blue dragon-fly. And they had a lovely time dancing in the sunshine among the flowers. And always after that they remembered that the way to have a good time was to take turns.

The Pancake

Once there was a mother who was frying pancakes, and seven hungry children were waiting for the pancakes to be done.

"O, mother, please give me some pancake," said the first child. "O, dear mother, please give me some pancake," said the second child. "O, dear, nice mother, please give me some pancake," said the third child. "O, dear, nice, sweet mother, please give me some pancake," said the fourth child. "O, dear, nice, sweet, good mother, please give me some pancake," said the fifth child. "O, dear, nice, sweet, good, pretty mother, please give me some pancake," said the sixth child. "O, dear, dar-

Then the pancake met a duck. "Where are you going, pancake," said the duck. "Stop and let me go with you." But the pancake said: "I've run away from a father and a mother and seven hungry children and a hen and a turkey, and I'll run away from you-oo-oo."

Then the pancake met a goose. "Where are you going, pancake?" said the goose. "Stop and let me go with you." But the pancake said: "I've run away from a father and a mother and seven hungry children and a



SO THE FATHER AND THE MOTHER AND THE SEVEN HUNGRY CHILDREN
RAN AFTER IT

ling, nice, sweet, good, pretty mother, please give me some pancake," said the seventh child.

"Yes, indeed, I will," said the mother, for they were such good children, and were asking so nicely.

Then the mother turned the pancake over, but just as she turned it, it got onto the edge of the pan, and in a minute it rolled down on the floor, and out of the open door, and down the road. So the father and the mother and the seven hungry children ran after it.

Then the pancake met a hen. "What are you running away for, pancake?" said the hen. "Stop and let me go with you." But the pancake said: "I've run away from a father and a mother and seven hungry children, and I'll run away from you-oo-oo."

Then the pancake met a turkey. "Where are you going, pancake?" said the turkey. "Stop and let me go with you." But the pancake said: "I've run away from a father and a mother and seven hungry children and a hen and I'll run away from you-oo-oo."

hen and a turkey and a duck, and I'll run away from you-oo-oo."

Then the pancake met a pig, and the pig said: "Where are you going, pancake? You'd better stop and let me go with you, for you are coming to a stream of water, and you can't get over it alone." "How shall I get over?" said the pancake. "You may ride on my nose," said the pig. So the pancake got onto the pig's nose, to ride over the stream. And the pig made one bite and swallowed the pancake up. So the father and the mother and the children had to go back and wait for some more pancakes to be fried.

The Crane Express

Once upon a time there were six little fat fluffy friendly sparrows, sitting on the shore of the Mediterranean Sea. "Fat and fluffy friends," said the first little sparrow, "I have heard that the cold weather is coming. What shall we do?"

Said the second little sparrow: "Let us go to Africa."

"Why should we do that?" said the third little sparrow.

"Because," said the fourth little sparrow, "I have heard that the sun is always shining there, and that when you open your mouth the worms go walking into it."

"But it is across the sea, I have heard," said the fifth little sparrow. "And our wings are very short."

"We must get somebody to take us," said the sixth little sparrow.

Just then they saw a big sheep walking by.

"Dear sheep, will you carry us to Africa?" said the little sparrows. "O, no," said the sheep, "I must stay here with my little lambs, and I can't swim."

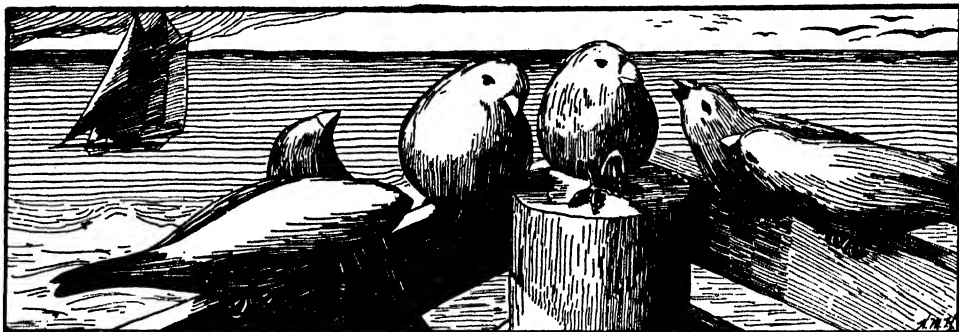
So then they went down to the waterside, and there they saw a big fish.

"Dear fish, you can swim," said the sparrows. "Will you carry us to Africa?" "I will carry you to the bottom of the sea," said the fish, and he turned and made a big dive down in the sea.

The Musician and the Dancer

Down by the farmer's threshing floor some large black ants once settled and built their nest, because they wanted to be near good food, such as wheat, corn and barley.

They worked hard, and they prospered, and grew to be so many that by and by they had to have a king to govern them. The king was very wise and brave, and he wore a gold crown and a scepter. The crown was made of a tiny piece of gold wire, that the ants had found in the work-basket of a village maiden, on one of their excursions. The scepter was a tiny gold key which had dropped from the farmer's watch chain, but as soon as it was in the king's hand it became a scepter. The king was now so old that he had to drive all the time in a carriage. He had his own carriage made of a nut-shell and drawn by two well-trained beetles. All his people loved him very much, but he was so old that he was now quite white, and he was very weary and feeble, so that he took no pleasure in anything.



SIX LITTLE FAT FLUFFY FRIENDLY SPARROWS

"Dear me," said the little sparrows. "It is a good thing we did not go with him." Then the sheep said: "You must get the cranes to carry you."

"What are the cranes?" said the little sparrows.

"Don't you know?" said the sheep. "The cranes are very big birds, with long necks and still longer legs, and every year they fly over the sea to Africa."

So the little sparrows watched until they saw some of these big cranes come along. "Will you carry us to Africa, dear cranes?" they said.

"My back is full," said the first crane, and indeed his back was covered with little birds. "But the fourth behind me has room," he said. So when the fourth crane came along, up went every one of the little sparrows, hop, skip flutter, scramble, and away they went to Africa.

Now, the cranes do really carry little birds with them to Africa, but as to the worms walking into their mouths when they open them, if I were you I would wait until I saw that before I believed it.

One day there was a great tumult, for the ant soldiers had been out fighting, and they brought in some prisoners. The king came down to see them and the soldiers saluted him as they brought forward their prisoners.

The first was a spider.

"What is your name," said the king, "and where were you born?"

"My name is Spider," she replied humbly, "and I was born in the dark cellar."

"What can you do?" said the king. (For the ants are always busy themselves, and they like to know what other people can do.)

"I know how to weave cloth, your Majesty," said the spider. "There is no one in the world who can weave better than I."

"Good," said the king. "You may show what you can do, and weave some hangings for my house. If you do well, you may be set free afterward."

Now the second prisoner was brought in.

"What is your name, and where were you born?" said the king.

"My name is Bee, your Majesty," she said, "and I was born in a hive, which is a large house for bees to live in."

"Do you know how to work at anything?" said the king.

"Certainly, your Majesty," she replied. "I can make a most delicious kind of food, which is called honey."

"Very good," replied the king. "You may make some sweet-meats for a grand festival that I am going to give to my people, and if you do it well, you may go free afterwards."

Then the king rapped on the floor with his scepter, and the soldiers took the bee and the spider away.

"Bring in the others quickly," said the king, "for I have business to attend to this morning."

These two prisoners were named cricket and grasshopper. One had been born in the field and the other under a bush.

"And what do you know how to do?" said the king.

"I know how to sing, your Majesty," said the cricket, "and the grasshopper knows how to dance."

"Tut, tut, tut," said the king angrily, so loud that he frightened the soldiers and courtiers. "Those things are of no use. I shall have your heads cut off, the pair of you."

"Please, your Majesty," said the cricket, "we really are of some use. We amuse all the other creatures, when the sun is hot and they are tired. I make music in the fields in the summer, and the grasshopper dances so merrily that everybody enjoys seeing her. Allow us to show you what we can do."

The king was not hard-hearted, so he said: "I grant your request. If you can amuse me, I am sure you can amuse other people, for I am so tired that I can never laugh."

Then the cricket sang with all the skill she possessed, and the grasshopper danced and hopped as hard as he could. The king had never heard so sweet a voice or seen so graceful a dancer, and he laughed until he almost fell off his throne.

"Yes," he said, "I will set you free, and only ask that when you have time you will come and amuse us a little after our work is done. I will grant each of you whatever favor you like to ask."

"I ask that the poor spider may be released," said the cricket.

"And I that the bee may be set free," said the grasshopper.

"You have good hearts," said the king. "What you ask shall be granted."

So they went back to the fields with great happiness.

How Baby Ray Got Up in the Morning

The sun was up and the breeze was blowing, and the five chicks and four geese and three rabbits and two kitties and one little dog were just as noisy and lively as they knew how to be.

They were all watching for Baby Ray to appear at the window, but he was still fast asleep in his little white bed, while mamma was making ready the things he would need when he should wake up.

First, she went along the orchard path as far as the old wooden pump, and said: "Good Pump, will you give me some nice clear water for the baby's bath?"

And the pump was willing.

The good old pump by the orchard path Gave nice, clear water for the baby's bath.

Then she went a little farther on the path, and stopped at the wood-pile, and said: "Good Chips, the pump has given me nice clear water for dear little Ray; will you come and warm the water and cook his food?"

And the chips were willing.

The good old pump by the orchard path Gave nice, clear water for the baby's bath.

And the clean, white chips from the pile of wood

Were glad to warm it and cook his food.

So mamma went on till she came to the barn, and then said: "Good cow, the pump has given me nice, clear water, and the wood-pile has given me clean, white chips, for dear little Ray; will you give me warm, rich milk?"

And the cow was willing.

Then she said to the top-knot hen that was scratching in the straw; "Good Biddy, the pump has given me nice, clear water, and the wood-pile has given me clean, white chips, and the cow has given me warm, rich milk for dear little Ray; will you give me a new-laid egg?"

And the hen was willing.

The good old pump by the orchard path Gave nice, clear water for the baby's bath

The clean, white chips from the pile of wood Were glad to warm it and cook his food.

The cow gave milk in the milk-pail bright

And the top-knot Biddy an egg new and white.

Then mamma went on till she came to the orchard, and said to a red June apple tree. "Good Tree, the pump has given me nice, clear water, and the wood-pile has given me clean, white chips, and the cow has given me warm, rich milk, and the hen has given me a new-laid egg for dear little Ray; will you give me a pretty red apple?"

And the tree was willing.

So Mamma took the apple and the egg and the milk and the chips and the water to the house, and there was Baby Ray in his night-gown looking out of the window, watching for her.

And she kissed him and bathed and dressed him, and while she brushed and curled his soft brown hair, she told him the Wake Up story that I am telling you:

The good old pump by the orchard path Gave nice, clear water for the baby's bath.

The clean, white chips from the pile of wood Were glad to warm it and cook his food.

The cow gave milk in the milk-pail bright,

And the top-knot Biddy an egg new and white;

And the tree gave an apple so round and so red

For dear little Ray who was just out of bed.

—From Eudora Bumstead's Wake Up and Go Sleep Stories.

Importance of Stories. The importance of stories and talks with children at bedtime can hardly be over-emphasized. It is the time when childish fears, troubles and wrong-doings can be drawn out, in confidence, and when help can best be given. The opportunity for winning confidence, and leaving the child with happy and affectionate feelings, as he goes to sleep, is most valuable. With nervous and sensitive children, to be left with something wholesome and interesting to think of prevents wakefulness and other bad habits.

The list of children's stories and other books, published by the Frederick A. Stokes Company, New York, is one of the best.

LIST OF STORY BOOKS SUGGESTED
FOR VERY YOUNG CHILDREN

Mother Goose Rhymes.
Nursery Finger-Plays
Through the Farm-Yard Gate. } Emilie
Father and Baby Plays. } Poulson
The Three Ting Pigs.
The Three Bears.
Little Black Sambo.
Benjamin Bunny. } Beatrix Potter.
Peter Rabbit. }

FOR CHILDREN FROM FIVE TO EIGHT YEARS

The Child's Garden of Verses. R. L. St ven-
son.
Mother Stories. Maud Lindsay.
Squirrel Nutkin. Beatrix Potter.
Stories of East and West Red Children. Mara
L. Pratt.
For the Children's Hour. Bailey.
The Story-Teller's Book. Throop and O'Grady.
The Story-Hour. Wiggin & Smith.
In Story-Land. E. Harrison.
Nature Songs for Children. Knowlton.
Small Songs for Small Singers. Neidlinger.
First Book of Birds. O. T. Miller. Houghton.
The Farm Book. E. Boyd Smith; Houghton.
'Twas The Night before Christmas. Clement
Moose; pictures by Jessie Wilcox Smith;
Houghton.
The Farm Yard, Cecil Aldin's Painting Books;
Dutton.
Songs for the Little Child, Clara B. Baker;
Abingdon Press.

FOR CHILDREN FROM EIGHT TO TWELVE YEARS OLD

Grimm's Fairy Tales.
Andersen's Fairy Tales.
Legends Every Child Should } Mable.
Know. } Houghton,
Myths Every Child Should } Mifflin & Co.
Know. }
The Heroes. Kingsley.
Stories of Colonial Children. Mara L. Pratt.
Heidi. Johanna Spyri. Everyman's Library,
Wanamaker, New York.
The "Little Cousin" Books (Life of children in
foreign countries).
The Children's Book. H. E. Scudder.
Just So Stories. Kipling. Scribner's, New
York.
Alice's Adventures in Wonderland. Carroll.

Plutarch's Lives. (Pocket Classic.)

The Song of Life. M. Morley.

Second Book of Birds. Miller. Houghton,
Mifflin Co.

Stories of Plants and Animals. } Wright,
Stories of Earth and Sky. } MacMillan
Stories of Birds and Beasts. } Co.
(Heart of Nature Series.)

Child's Book of Verses. E. V. Lucas.

The Posy Ring. Wiggin & Smith.

The Fairy Ring. Doubleday, Page & Co.

All books whose publishers are not named
may be obtained from the Milton Bradley Co.,
New York, or Springfield, Mass.

The stories suggested are not a complete
list. A much larger one can be had for 10
cents, by addressing the chairman of the Lit-
erature Committee of the International Kin-
dergarten Union, Chicago Teachers' College,
Chicago, Illinois.

List of Home Occupations for Children

Paper tearing, cutting and pasting, paper
and cardboard folding or modeling; string-
ing objects into chains; sewing, fancy work,
dressing dolls, using tools, glue, passepartout,
clay work, sand, plasticine, dough; scrap
books; collecting of post-cards, stamps, coins,
minerals, curiosities; blue prints; puzzles,
bought and home-made; nature work out of
doors.

Materials Needed or Desirable. All those
named in the list of kindergarten materials,
and also the following:

Clay or plasticine, with a book on clay
work. *Clay-Modeling in the Schoolroom*, by
E. S. Hildreth, is simple and practical,
though not artistic.

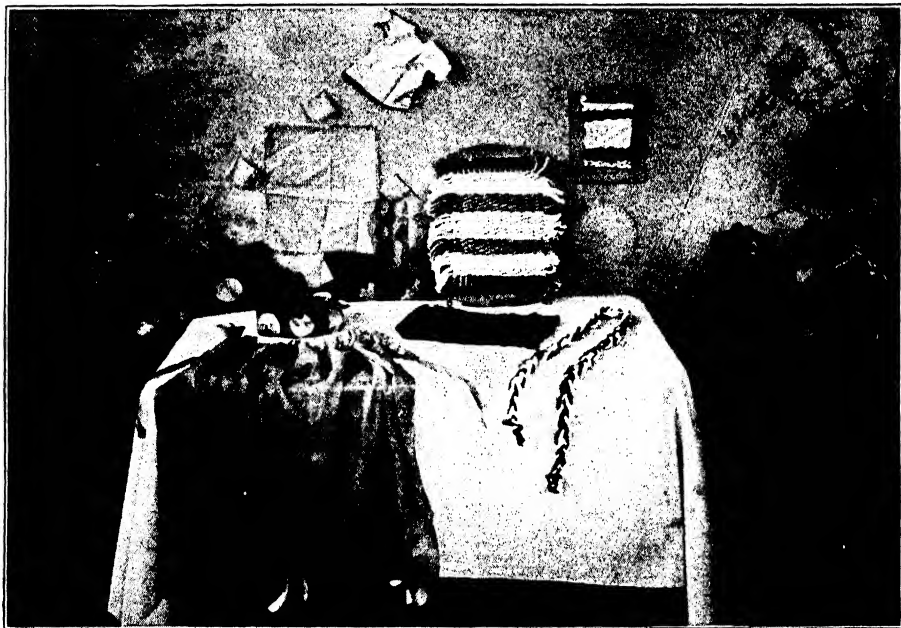
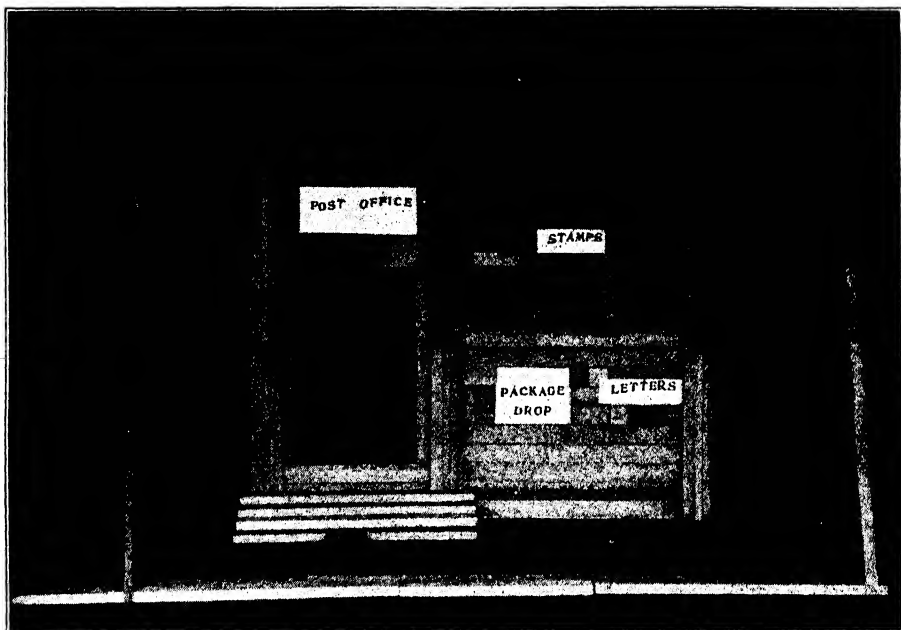
A book on paper cutting. The catalogue
of the Dennison Paper Co., New York City,
gives many suggestions for using paper.

Books of "Finger-Plays" or simple songs.
(A list will be found at the end of this sec-
tion.)

The beads for stringing and the peg tiles,
pegs and plasticine may be kept for "rainy
day" playthings, to be used when the children
cannot go out, and reserved for this only.

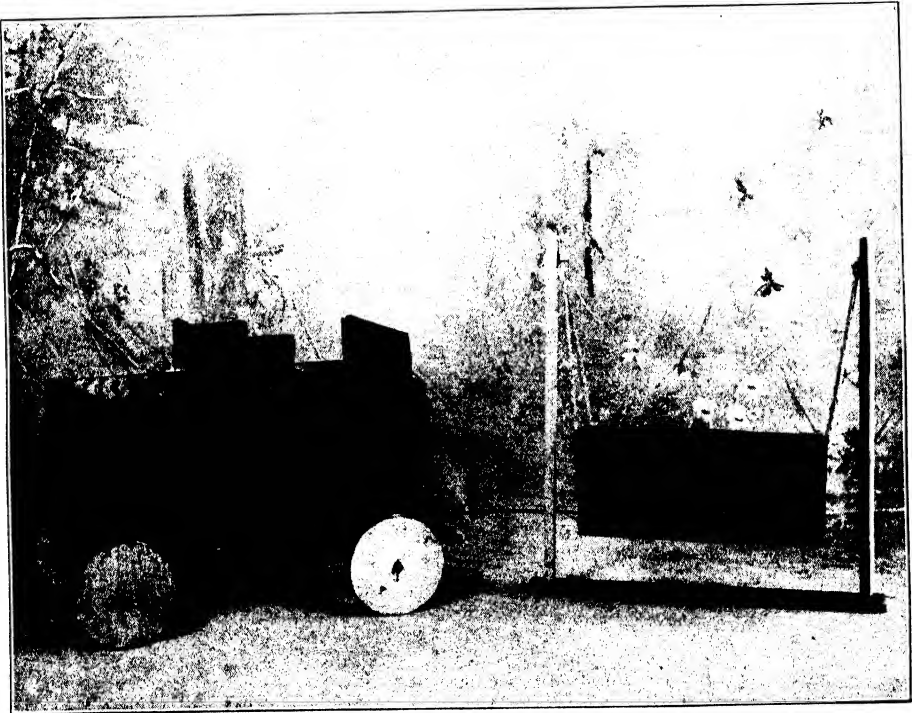
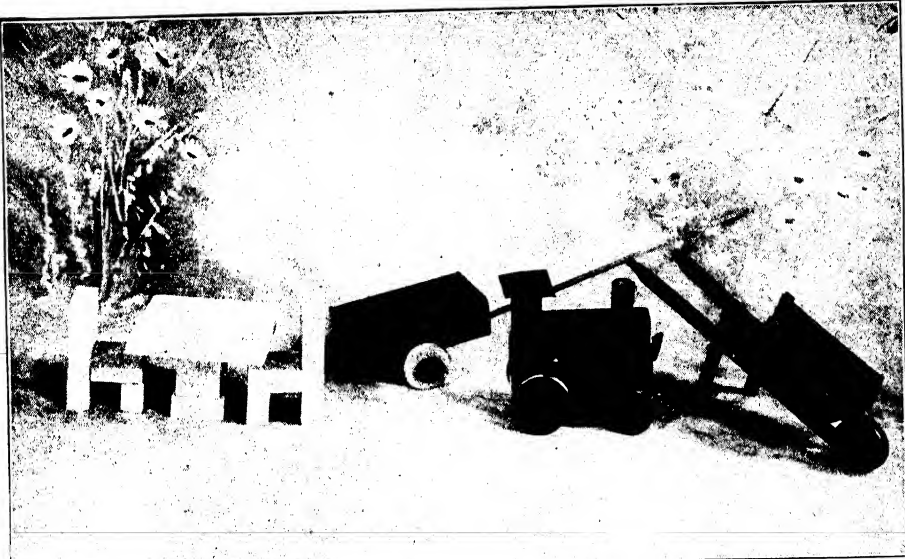
If home material, at very small expense, is
desired, a job-carpenter will prepare one
hundred oblong and one hundred cubical
blocks for a small price. For suggestions
as to character of material, sizes, etc., see
page 1953. Boxes of blocks can be bought
in stores, but generally contain too few.
Plasticine, silkline for sewing, and worsted
needles may be bought at department stores.
If beads are bought there, the largest size
should be asked for.

Colored paper for folding and cutting can
sometimes be bought cheaply at a printing



KINDERGARTEN OCCUPATIONS, OR PROJECTS

1. A typical building project: post office worked out by children with large blocks
2. Typical handwork: sewing, weaving, braiding



KINDERGARTEN OCCUPATIONS, OR PROJECTS

1. Typical toys made by children from material readily obtainable
2. Wagon and swinging seat made by children

office, which will cut a quantity into square pieces of any desired size; 5x5 or 6x6 inches is a good size. Prepared clay can sometimes be obtained at a pottery. Sand for a sand-box or for trays can be had from a builder, and if covered, can be used out of doors. A box of it may be kept in a covered porch or gallery.

Spools, cylinders on which ribbons are wound and cards which have had buttons on them, are all useful for making toy furniture; and the paper strips sometimes rolled with the ribbons may be cut in lengths, and some of them colored, for plaiting or making paper chains. Small pill and medicine boxes, match boxes and bits of wood, help to make furniture. Large sheets of ordinary wrapping paper may be cut in suitable sizes for drawing paper; and the children may save colored wrapping paper, to cut in strips or squares for themselves. Small brass tacks, and brass fasteners, such as are used for papers and note-books, are very useful.

The first necessity is a place for children to keep their materials; preferably a play-room or attic, with cupboards; if not that, a large cupboard where each child has a share of space with shelves and boxes which are his own; if that is impossible, at least a book-case or wall cupboard where each may have a shelf for boxes, or at worst, a bureau drawer for his treasures. A child can have no joy in materials if he cannot preserve his results; for a time, anyway. A little girl, asked what she most wished for in the world, said: "A place to keep my things." What is trash to an adult is often dear to a child; but once a place is taken, tidiness may be the price paid for it, and this is a fine training; the child has rights, but he should not make life intolerable for the rest of the house. Shoe boxes and others of various sizes should be saved and the children's names put on them; no one to interfere with the contents. When they overflow bounds, the owner may choose what he will keep and what must be got rid of.

Develops Self-Expression. The keynotes of the kindergarten handbook are two: expression, or "self-expression" as it is generally called, and development, or step-by-step progress, from easy to difficult, from simple to advanced, from familiar to new work. That is, the child has many sides of his nature which need other expression than words, and many ideas, especially the germs

of artistic ones, which he could not put into words. He can, through his power of "creating," express them by materials. He has a chance to express, to clinch the perceptions of color, contrast, etc., which are awakened by the experiments with the gifts; and he expresses, besides, all his childish delight in nature and life, by trying to make the objects he sees about him. Froebel tried to provide a large range of materials, which covered many degrees of resistance, flexibility, or plasticity, so that a fairly complete set of life experiences might be expressed: string, clay, sand, chalk, seeds, worsted, paper, cardboard, peas with sticks, wooden slats, etc. A teacher uses these in a more systematic way than they can be used at home. The aim of home work is to use a variety of materials, so that the children can soon learn to employ themselves independently, and be happy in it; and to work, in some degree, from easier to more difficult things. For this reason, all the objects illustrated here for home use will be grouped so as to have three or four of each in connection.

1. Stringing. This is the simplest occupation; beads, which should be large enough to be threaded on a cord without a needle, or on a worsted-needle; buttons of all kinds; spools of all sorts (if many can be collected, some may be colored with Diamond Dye); clay beads made by the child (about $\frac{1}{2}$ to 1 inch diameter) and pierced while soft; these also may be colored; nature materials, as seeds, acorns, sweet gum, seed-vessels, poppy-heads, are good for stringing.

Sand. The first sand-play for very young children is merely filling and emptying a pail; or a mug may be filled with a spoon, if the child plays with a small sand-box or sand-table in the house.

2. Making heaps; piling up mug-fulls, or making "sand-pies" with the hands.

3. Making rows of holes, with a smooth stick; the child will enjoy fitting his fingers into these, or sticking twigs into them, to play "garden."

4. Lines or "roads" drawn with a stick in the sand; children will enjoy making toy animals or little dolls walk along these and jump "ditches," etc.

5. Combining the heaps and lines, as a "house," with a "garden" round it, or a fort with a ditch, etc.

6. Impressions made in the sand with toys, the outline of the hand, etc.

7. Picture-tracing in the sand.

8. Molding the sand in definite shapes by using tin patty-pans, boxes, etc., to pack the moist sand in and turn it out; the children will call them cakes, pies, etc. These give them the idea that they can shape forms better, and they will try.

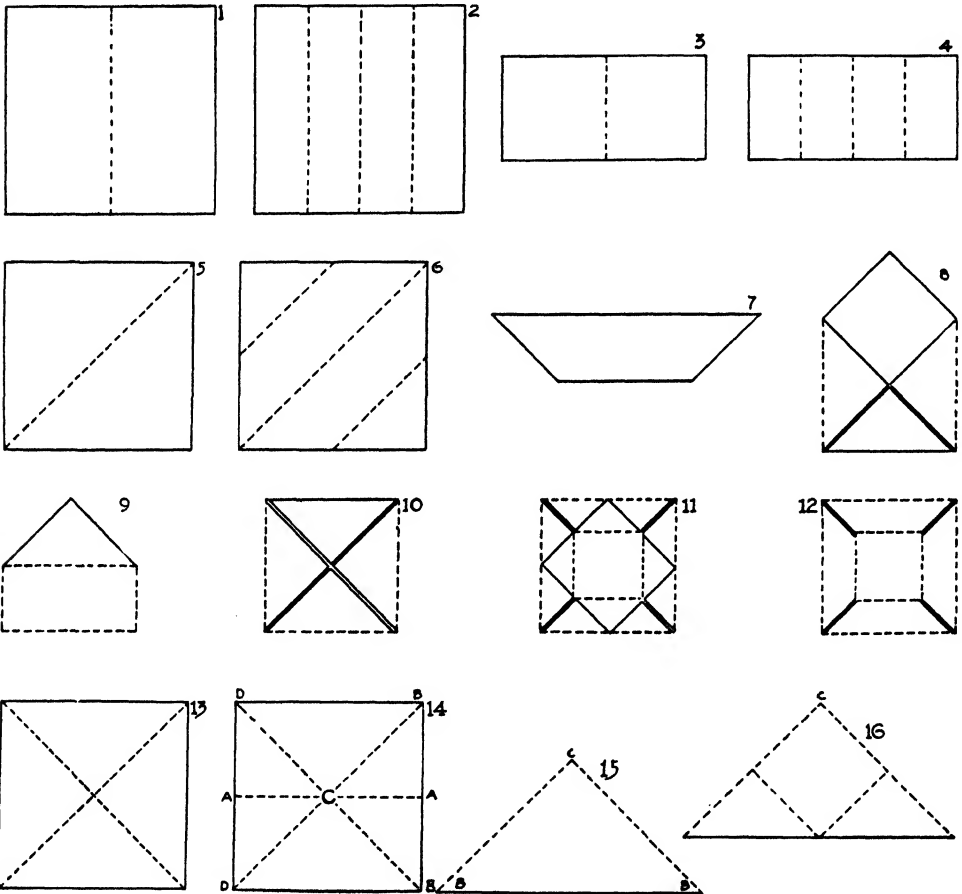
9. Castles, towers, or anything the children want to imitate or illustrate.

10. Illustration of stories, etc. Little Red Riding Hood going through the wood can be

In sand and in clay, the suggestions are only intended to help out the children's ideas and to be interspersed with them, and should cover quite a long period of time, being repeated with slight differences.

Clay. If this is not bought ready for working, it will take a little practice in mixing, to get it of the right stiffness. It must then be kept moist, in an earthen crock, with a wet cloth over it.

"Plasticine," a sort of prepared modeling



FIRST SIMPLE PAPER FOLDING

1—Fold opposite edges together. 2—Fold edges to center line. 3—Fold No. 1, then fold across again. 4—Fold No. 3, then fold ends to center line. 7—No. 6, doubled. 8—Three corners to center. 9—No. 8, folded. 10—Envelope. 11—Frame; corners of No. 10, folded back. 12—Frame; corners turned inside. (13, 14, 15, 16, steps in making soldier caps.) 13—Fold on diagonal; open, and fold opposite diagonal. 14—Open and fold across A-A, as shown. 15—Join (in 14) C-B to C-B, C-D to C-D, so A-A is folded in between. 16—Turn (in 15) corners B-B under, so they will meet at C.

represented by sticking in twigs; the grandmother's and mother's houses at each end, and a small doll for the little girl, etc.

wax, may be bought at toy-stores or department stores. It is more expensive than clay, but is more convenient.

Any modeling material should be handled quickly and worked over as little as possible, since the heat of the hands dries it. When giving it to the children, it may be divided, by drawing a string across it.

The only tool needed for home use is a small sharp stick or long pin, to make decorative lines or markings with, or to indicate the veins on leaves, the edge of the lid on a dish, or the eye or mouth of an animal.

Each child should have a square of kitchen oil-cloth, on which to put his material.

The children can, of course, play with it by themselves, and express their ideas, in a measure; but they will soon come to the end of their powers, from lack of technical skill and method.

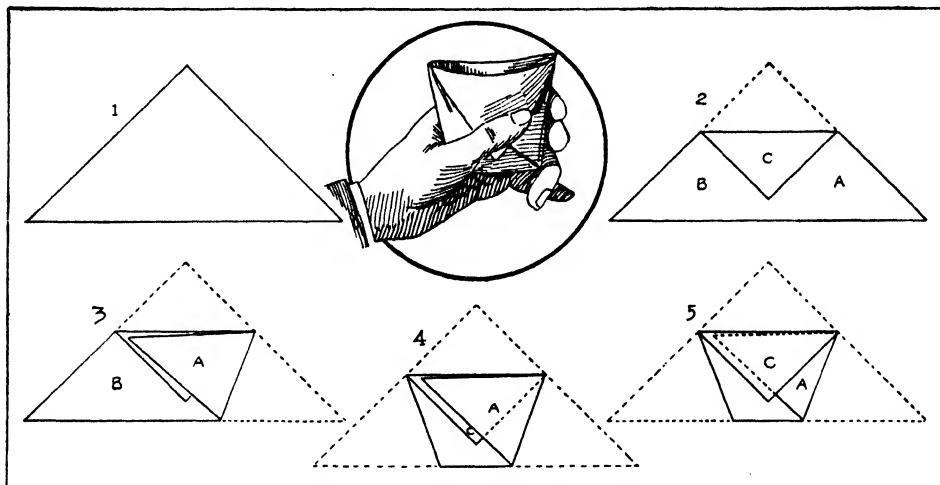
It is better for an adult to work with them part of the time, giving definite suggestions or helping them out with their ideas; and then to leave them to invent other things.

It is better to work in solid masses, as much as possible; e. g. when a basket, cup, jug, etc., is made, to make it solid, not hollow;

of a cup, the spout, handle and knob of a teapot, must be quickly put on, before the clay dries.

Extreme correctness or form must not be aimed at.

Much less handling is needed when simple mass forms are made, several alike, with only the detail varied. For instance, the same ball form will make cups, teapot, sugar-bowl and creamer for a tea-set; the cups need only to be flattened on the bottom, and pressed in slightly at the top; the same treatment forms the jug with one side pinched out for the spout; a tiny rolled piece makes the handle. The sugar-bowl and teapot have a line slightly pressed in, on the top, to show the edge of the lid, and a wee knob is put in the middle of it. In clay, as in other things, to try what can be made under a certain limitation really gives freedom. Another interesting group of objects is a set of loaves of bread, twists, rolls, buns, etc.; the children will invent doughnuts and cookies.



HOW TO FOLD A DRINKING CUP

the children can play that it is full of something if they wish. Plates, saucers and dishes should be made thick, as they keep shape better.

It is best to begin with round things, as a little gentle pressure and rolling in the palm will round a small mass into shape quickly. Marbles, round beads, which may be pierced or strung, while soft; apples, cherries, tomatoes, etc., are good to begin with; details added, such as the stalks of fruit, the handle

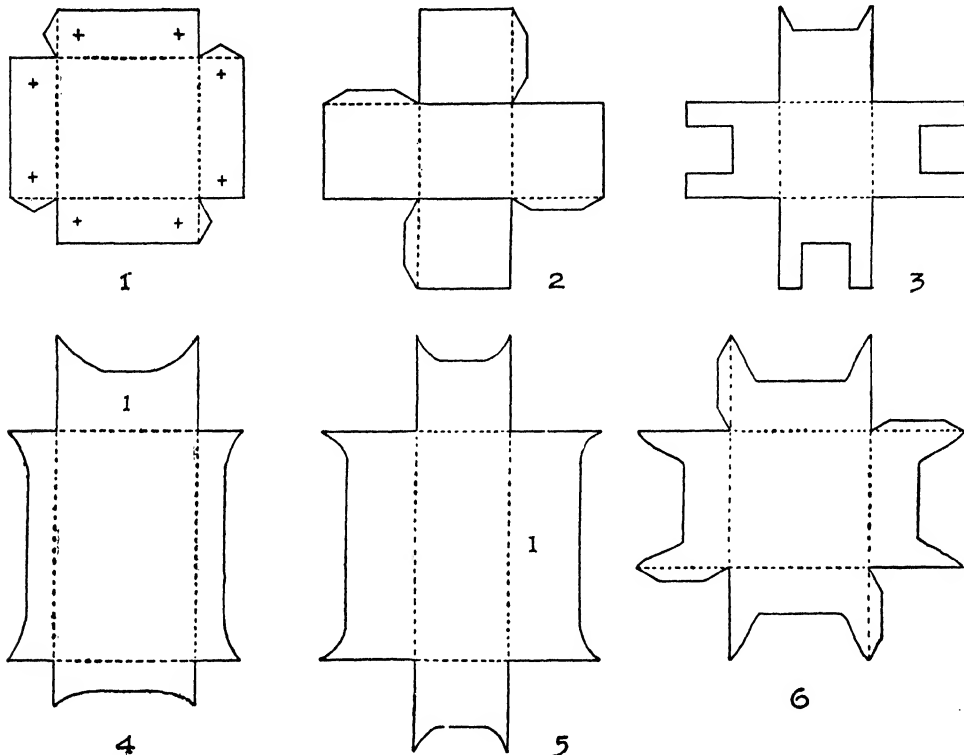
The roll form, such as a "jelly-roll" cake, may be adapted in various ways. Set on end with a handle added, it makes a mug, and a lip pressed out turns it into a straight jug. Rolls of butter, sausages, potatoes, ears of corn,—the grains marked with a tooth-pick—are other suggestions that will please the children. A rolling-pin, pail with lid, etc., may be invented.

Many other fruits and vegetables can now be made; potatoes, bananas, pears (made by

elongating and narrowing a ball-form), a bunch of grapes, carrots, radishes; eggs, bowls and dishes of several shapes, flower jars and vases of simple forms may be tried, for the doll-house. Animals are more difficult, but good directions for these, with illustrations, may be found in Mrs. Hildreth's little book. *Clay Modeling in the School-room* (Milton Bradley Co.).

The children may also trace pictures, outlines of flowers, leaves, etc., on tiles or flat

probably occur to them, according to the position it is in; for instance, a square or oblong piece of paper, doubled once, will be called a sofa when placed sideways; a door or screen when standing upright; a cradle when placed with the angle down, and rocked between the hands; a barn, reversed from this, with the angle up. Little children will much enjoy making this several times in red, blue and brown paper, playing "furniture shop," with sofas and screens to sell.



CARDBOARD FURNITURE FOR DOLL HOUSE

1—Box, or pin tray. 2—Box. 3—Chair; top section is to be bent up; the other pieces, bent down. 4—Bed; bend ends up, sides down. 5—Sofa; bend (1) up, others down. 6—Table.

tablets of clay; but the raised work which really belongs to these is for a more advanced stage of work.

Simple Paper Folding. In working with very young children, remember that practice is to be given by letting them make each thing several times, perhaps many times over. They will cheerfully do this, if a different color of paper is supplied, and if they are allowed to play with what they have made; several different names for each thing will

They should on no account be hurried from one thing to another, and in making the various forms illustrated in this article, remember that there is continuous progress from easier to harder forms, so that the easier should be made first, even though the others seem more attractive. If the children make mistakes at first, do not let them be discouraged, as the form made can generally be used for something else, and even a mistake may lead to a new invention.

Success depends only on having the edges straight, and folding or creasing neatly and firmly.

The first forms are for practice in folding, folds or creases being always dotted lines, while black lines are edges and cuts.

No. 1, page 1966, to be used for a door, book, screen, seat, barn, or roof.

No. 2, after being folded in the middle, is to be opened and the sides folded to touch the center line. This the children will use for a cupboard with doors, when set on end. Laid flat, with the sides opened, it will serve for a "bed" or "cradle," and reversed, for a long table.

No. 3 is the same as No. 1, when folded, and is to be folded across again, making a small seat. Sets of these should be made for a furniture shop.

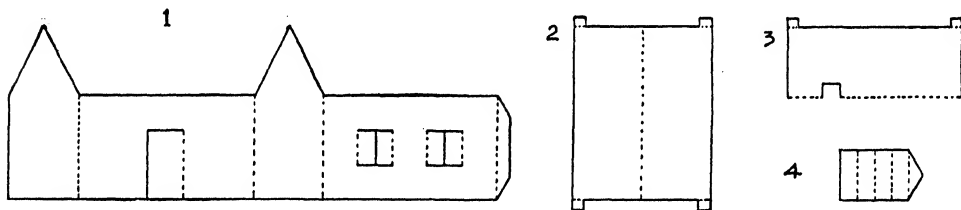
No. 4 has the ends of No. 3 folded to the middle line, making a small cupboard, bed, or table. A folding bed can be made by making two of No. 4, and inserting the open ends of each into the other, to close it up.

No. 5 the children will call a shawl, or push it for a "choo-choo"; No. 7 is No. 6 doubled at the center line, for a boat. The children will like to make a whole fleet of these in

paper across the corners. These boxes will give more pleasure if made in sets of several sizes, fitting in like Japanese boxes; and they may also be made in twos, one serving as cover. By taking an oblong, instead of a square sheet of paper, and trying the same folds, different shapes of similar objects may be made. By cutting an inch in, on the slanting line at the corner, lapping this part over at the ends and pasting it, a water-trough and other forms may be made. The drinking cup illustrated, or any of the boxes, may become a "basket" by having a handle put on.

Directions for Cardboard Boxes and Furniture. The boxes are best to do first, because the other things are made on the same plan and when the children have learned to cut and modify the box form, they can change it in other ways, at pleasure. The dotted lines are creases.

For No. 1, cut a piece of thin card, of stiff paper, 5 inches square. Crease it 1 inch in from each edge. Then cut the corners by



CARDBOARD HOUSE

1—The dotted lines show where the paper is to be folded and bent; the solid lines show cut edges; the doors and window-shutters are to stand open. 2—Roof. 3—Roof, showing cut to insert chimney. 4—Square chimney. For this house, cut a piece of cardboard $14\frac{1}{2}$ inches long, 3 inches deep at sides, and 5 inches at the gables. Paste overlapping pieces. The roof is 5×2 inches inside of pasting pieces. Side walls

are 5 inches; ends, 2 inches. different colors and sizes, giving names to them, and "sailing" them along the table. Nos. 8 and 9 may be used for wall-pockets; No. 10 for letters or valentines to play "post-man" with; Nos. 11 and 12 may have small pictures inserted in the frames.

Nos. 13-16 are the stages in making a soldier-cap. The cap may be made in large size in newspaper or wrapping-paper for the children to play "soldiers" with.

This outline of simple forms gives material enough for two or three weeks' work, as the children should not go on to new folds until they can easily do the earlier ones, and should repeat each, in other sizes and colors, and play with them.

By folding the paper into 16 squares and cutting out an inch at the corners, another box may be made, by turning up the sides an inch in depth and pasting a small bit of

aid of the creases, 1 inch in, except for the tabs, which are to be pasted over on the inside of the next piece. If it is hard for the children to paste neatly at first, the tabs may be omitted, and the sides joined, by piercing holes where the little crosses are marked and tying with colored cord or baby ribbon. Made in colored cardboard, these are nice little pin-trays, and may be decorated with stars or fancy stamps for Christmas gifts. See drawings on page 1968.

No. 2. This square box is made from a piece of cardboard 6 inches square, the sides being 2 inches deep, and the bottom the same. A lid can be made by cutting a similar box from a 3-inch piece and making the sides only half an inch deep.

No. 3. The chair is made like box No. 2, except that it is not pasted together. The back is bent up, and the three sides down. The cutting of open spaces in the sides is optional.

No. 4. The bed is made of a piece 8 inches long by 5 wide. The crease for the head is

made 2 inches from the end, and this is bent up. The sides and other end are only 1 inch deep; as with the chair, the sides and ends may be cut straight instead of being curved in.

No. 5. The sofa is cut from a piece of cardboard 9 inches long by 6 wide, the seat being 5 inches long by 2 wide. The creases are made 2 inches from the edge on every side.

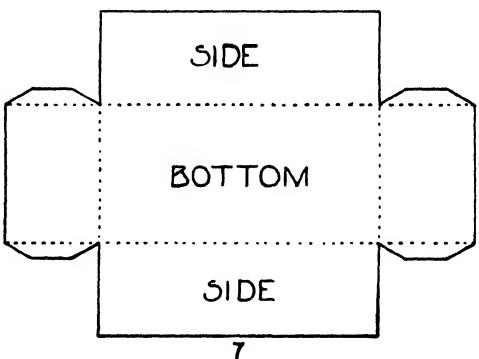
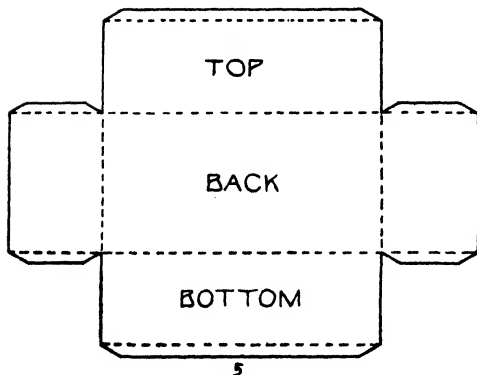
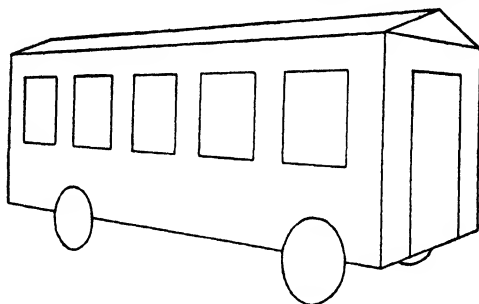
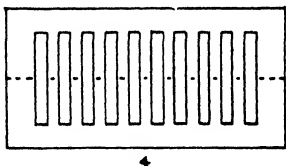
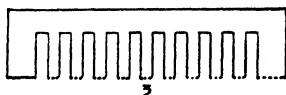
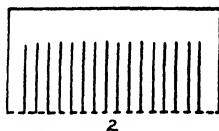
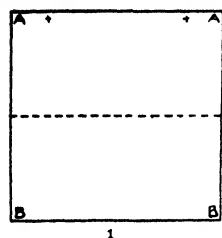
No. 6. The table is made like the first box, but from a piece 7 inches square, so that each side is 2 inches deep and the table top 3×3

ticles are made in school. The children should be encouraged to notice the proportions of each article—whether the length is once-and-a-half, or twice, the width, etc.; they should also be allowed to invent new articles.

Directions for Making Lantern, Cage, Etc.

In all work of this kind, the children become more independent if the work leads gradually from the old to the new. It is best to begin by letting the children fringe paper towels for the doll-house, cutting the ends in parallel lines as evenly as they can. Next, they may fold a strip of paper doubled lengthwise, and cut it the same way; this will do for a ham-bone frill, when opened out and doubled the reverse way.

For the lantern, take a piece of colored paper, 4 or 5 inches square; fold it double, according to the crease in No. 1. Then make straight cuts as in No. 2, one-fourth of an inch apart and an inch and a half deep. If the children cannot at first keep the cuts reg-



PAPER CUTTING

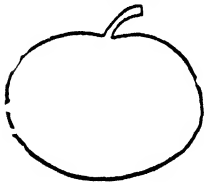
1—Lantern. 3—Front of cage, folded. 4—Body of cage (best if made of cardboard). 5—Front of cage, finished. 6—Street car; windows as in cage; roof may be added, as in cardboard house. 7—Wagon; add a long strip for tongue, and mount on wheels, like street car.

inches; the flaps for pasting are optional. The children will soon learn that they can make the height and depth of each article what they please and this work becomes an excellent exercise in mensuration, when the ar-

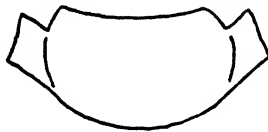
ular, the lines may be penciled. Then open it and paste it together, A overlapping at A, and B at B, so as to make a cylindrical lantern, which will stand out a little at the middle crease. A strip of paper for a han-

die is pasted to the top, where marked with crosses. In colored paper these make a pretty decoration for a Christmas tree, or may be hung in the doll-house. The next step is an animal-cage for a menagerie. The front of the cage is made like the lantern; the strip of paper being 6 inches long and 3 wide, and

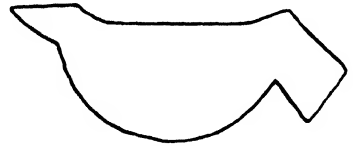
6, except where the ends, which are 2x3, project, making the center strip 10 inches long. After the creases are made along the dotted lines, the laps are to be pasted over on to the barred front piece. The ends need not be pasted but only tucked in. They serve as doors. The "cage" may be turned into a



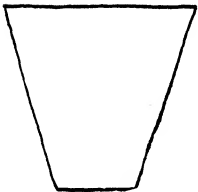
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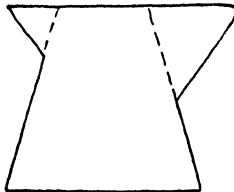
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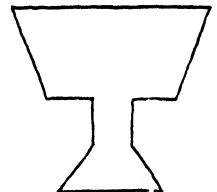
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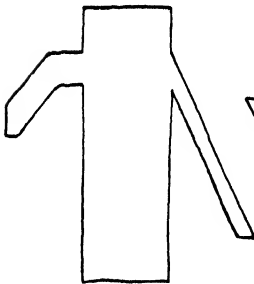
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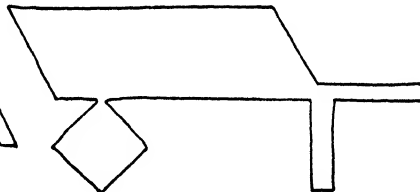
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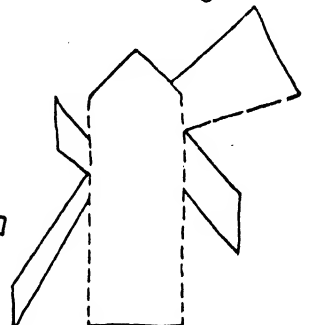
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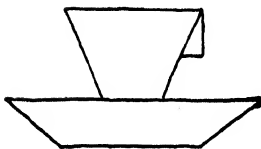
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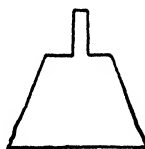
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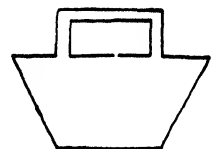
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10



11



12

PAPER CUTTING

1—Apple. 2—Sugar Bowl. 3—Cream Jug. 4—Tumbler. 5—Coffee Pot. 6—Berry Bowl. 7—Pump. 8—Wheelbarrow. 9—Windmill. 10—Cup and Saucer. 11—Bell. 12—Basket.

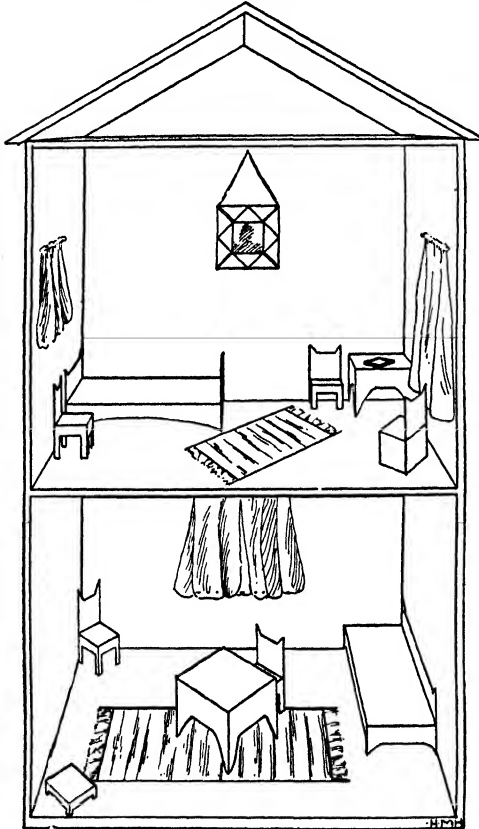
the cuts one inch deep after it is folded lengthwise. Next, every alternate strip is to be cut out so as to leave the remaining strips for bars, as in No. 5.

The rest of the cage is in box-form, the main part of it being 7 inches and a half by

street car, or railroad car, by fixing gunwads or circles of stiff card, such as milk-bottle stoppers, for wheels on the ends of two small sticks. Meat skewers, cut the right length, will serve. The car is then set on the sticks and may be held in place by strips of paper

slipped under the sticks and pasted to the bottom of the car. A sloping roof can be added like that used for the house already mentioned.

Free Paper-Cutting. The children may begin by cutting paper in bits to stuff cretonne cushions for the play-room; this may be followed by cutting paper in short strips and tying it on sticks for toy brooms; square pieces for napkins and round pieces for plates for a "tea-party" will be the simplest things to do next, and all sorts of picture-cutting may follow. Practice in



DOLL HOUSE

using the scissors to keep to an outline may be gained by taking a round piece and cutting round and round till the center is reached; this "snail-shell" will give pleasure, and the same thing be done with a square piece. Dolls and animals can be more easily cut after the children have cut these out of advertisements, old toy-books, etc.; that is, if the same kind of picture is cut a number of times, the children will gain some "mus-

cular impression" of the outline. This plan is part of the Montessori method; but there is no reason why the children should not also originate freely. A page of examples is given here to show how the same sort of outline, with different details, may be modified to make several different pictures.

Paper dolls are not given here, because they can be better made by cutting out figures from fashion-magazines and pasting a piece of stiff cardboard at the back, with a free strip for a support; or they can be bought for a penny at any stationer's. Children seven or eight years old can make their own by imitating these. A home-made doll house is a never-ending delight to children. A soap-box makes a good one. It should have a piece of board fixed in the middle, so as to give either two rooms side by side, or an upstairs and downstairs, if the box is on end. A roof may easily be added by forming a gable of two slanting pieces. On this, shingles cut out of brown paper may be tacked. The children can paint the sides of the house and design wall paper for the inside with paints or colored chalks. See illustration of a doll house on this page.

The toy furniture in boxes may be used, but it is far better to let the children make their own, either of paper and cardboard or of spools, bits of scrap-wood, etc. Paper fringed and "cut fancy ways" will serve for curtains, table cloths, etc. Rugs can be sewed, braided or woven for the floors. Boys may prefer to furnish one room as a shop, and in any case the fittings may be changed from time to time. Of course, work like this should be done on Saturdays, or in the evening, and it will furnish a powerful incentive to the children to get up early and get lessons done in good time.

Suggestions for Sand Table. A farm-yard, a ranch, a circus or menagerie, or a home-made Noah's Ark will give pleasure and occupation to children for a long time.

It can be arranged in the sand table or sand pan; or on a small table with a strip of wood or cardboard tacked round it, to keep the things from falling off. See illustration of sand table, later in this article.

The animals may be made from clay and colored; or may be cut out of magazines, such as *Outing*, *Country Life*, etc., pasted on thin cards and cut out again; a tiny support of cardboard must be pasted to the back so that they will stand up. The hunters, cowboys,

farmers, etc., are to be made in the same way. A description of the way to make cages for the animals will be found on another page.

Dough is almost as useful and delightful for children to work with as clay, and keeps them happily employed under mother's eye, when she is making pies, bread, or cookies. Cottage loaves and twists, in miniature size, are a joy for children to make; a "snow-man," "cookie-boy," etc., with currants for eyes, and dots of sugar or chocolate for buttons; animals of various shapes; rows of cats and kittens, made by tracing out a large oval for the body, with a small one for ears, for the head, and a long tail; stars and moons, flowers, etc., cut out in cookie-dough, and ornamented in fanciful ways. These make a never-forgotten joy for childhood, when looking back on it.

Keeping Christmas. The German cakes, illustrating fairy tales, made for Christmas, are full of happy suggestions; and simple home-made things, both for Christmas-tree decorations and for gifts, are part of Froebel's plan for the ideal home Christmas or birthday. The essence of his thought is, that the tiniest, most trifling expression of the child's affection, through his own activity, is far beyond any purchased gift in value, and is important in strengthening his emotion, keeping it alive. "Even the child's love," he says, "will fade and die if it be not turned into active forms of expression." So, in the kindergarten, the children make the decorations for the tree, and make the gifts for their parents, inviting them to come and receive them. The pleasure of preparation, and the joy in their own doing of it, is far greater than when they receive anything themselves.

The decorations may be "snow-balls" made of folded circles or squares of tissue paper strung as for shaving-balls; chains made of gold, silver and colored paper cut in strips and pasted into rings; lanterns, paper stars and snowflakes, colored paper baskets, etc. Other articles may be enameled and decorated, as: salt and pepper shakers from the ten-cent store, enameled black; book-ends enameled French gray with simple decoration cut from paper napkins and shellacked over the paper; bowls made of clay, painted and shellacked and filled with pebbles and one bulb; olive bottles, enameled dark green or black or blue with spots to represent bright

flowers made by drops of melted sealing wax. White cotton roving (a heavy yarn) may be purchased by the pound, and much pleasure and instruction may be had by dyeing the roving desired shades. Purchase one package each of red, blue and yellow dye; see the actual process by dipping from one pan to another,—making green by dipping from the yellow into the blue, or from red into the blue for lavender, or from yellow into the red for a lovely orange. These pieces may then be used in making many useful gifts,—jumping rope for sister, using two pieces for each part of the braiding; doll hammocks, woven on card-board looms, using Delft blue for the main part and white for the border; rugs for the doll house; cap and scarf for the little girl's friend, etc. Caps are woven on round pieces of card-board, of attractive color designs. This work helps to develop originality.

Scrap Books. There is no end to the number of ways in which scrap books may be used. First of all, the older children may make picture books for the babies, or to give away to poor children, by fastening together leaves of glazed calico into a book and pasting pictures into them. These are practical because they will not tear. Flour paste with a little powdered alum in it is best, if you are not near enough to town to buy paste in tubes or jars. After the muslin scrap books come bought ones, which should not be used until the children can paste neatly. Old account books and scribblers with every second leaf cut out can be filled with pictures, and old copy books may also be used.

A great deal more interest will be found in these if the pictures are classified. i. e., animal scrap books, bird books, flower books, may be made by children old enough to have special tastes; when they can read well enough clippings on the subject from magazines or newspapers may be added.

Now that the periodicals of the day furnish so many illustrations, a boy fond of engines and machinery can put these in a special book, and the same way with ships, Indians, soldiers, etc. A girl interested in cooking can make a receipt book when she is old enough.

The pictures should be kept in envelopes of manila paper or wrapping paper, labeled; and they may be collected from the advertisement pages of magazines, as well as the regular pages. A variety of books, which is

interesting to children from seven to ten, is a doll-house book. The pages may be furnished as the rooms of a house with cut-out pictures, showing all the "comforts of home" and a family of paper people may live in the book, passing from room to room by doors cut through. In collecting flower pictures, or leaf pictures for a book of trees, blue prints will be an interesting addition. All that is needed is a frame for printing photographs and a package of blue print paper. The child can soon learn to arrange leaves or blossoms so as to make a clear image on the paper, fasten them in the frame, and leave them in the sun long enough to take the impression. No one who has not tried it can believe how much interest may be found in a neighborhood seemingly almost barren, when one begins to observe trees, birds, etc., closely.

For a Sick Child. The paper-work given here is excellent for a sick child, because it can be burnt and renewed easily. A small board may be fitted like a bath-tub seat, with hooks at the end to support it on a crib. A kindergarten toy called the gonigraph, made of slats jointed together, is easily handled by a sick child and may be twisted into many different "pictures." Paper scrap books may be made for a sick child by the other children, to be burnt after the child's recovery. A child may often be tempted to eat by having some little fancy decorations on its food tray, or bread in tiny loaves, or a paper napkin folded in a box form for its fruit, etc. A roll of plain paper, of a dull surface, may be secured from a printer or a grocer and cut in large sheets, then tacked upon a lap board. This equipment, with large marking crayons, is fine for a child to use as a blackboard, as it does not strain his eyes. Work with the cotton roving, described on page 1973, is enjoyable work, as the roving is large and easy to handle.

Out-Door Amusements. Children are always interested in gathering and collecting blossoms, leaves, seeds, nuts, etc. In many places it is forbidden to pick flowers, but fallen leaves and seed-vessels may always be taken; chains, often very pretty, may be made of seeds and seed-vessels strung with a worsted needle and coarse thread; stoles or garlands may be made of leaves by pinning them together with leaf stalks; all sorts of funny objects may be made by sticking burrs together; perhaps the funniest is a "teddy-

bear." Dollies may be made of corn husks, the end serving as head, part of the husk separated on each side for arms and the rest of it tied in with a sash forms the skirt.

Dolls may be made of marguerites; the white petals form a bonnet, being cut away at the bottom; a little face is traced on the yellow center, and a bunch of grass tied around the stem for a skirt.

Many kinds of blossoms may be made into chains; poppy heads make tea-pots, with twigs stuck in for spout and handle. Milk-weed pods may be turned to parrots and other funny forms. However, the most interesting out-door occupation is making houses. A very small space of ground will allow of building mound-shaped houses and forts, with sand or clay, to which gardens, fields, etc., may be added; tent or wigwam houses may be made of branches (small branches are best, a foot long is quite enough); log houses may be made of crossed twigs, with leaves laid over sticks for the roof; small stones, bits of brick, shells, even bits of moss may be used to make ground plans of houses with one or more rooms, which the children find quite as satisfactory as more realistic ones. If space allows to lay out a toy village, colonial or Indian, a camp or even a farm or ranch, every addition will be a new pleasure, and a useful connection with history or literature may be made. Toy animals may be used if they can be made of clay, wood or paper. A stream, however small, will give endless joy in sailing boats and making miniature mills or dams; snow buildings are of equal interest in winter; and when a winter picnic can be held in a spot sheltered enough to light a fire and eat a meal, it is quite as enjoyable to healthy children as a summer one.

Gardening is, of course, a most wholesome occupation for children, and one constantly urged by Froebel. Even a window box garden gives pleasure; but there are now so many garden magazines that advice on practical work is always to be had. Many state universities furnish information and even seeds free to boys and girls. Doubleday, Page & Company and many other publishers have a large assortment of books and magazines on nature work and gardening. It is a good plan to write for specimen copies of magazines.

Of course, clothes must not be a burden to children in out-door occupations. Simple

rompers, overalls or pinafores, which can be soiled with impunity and allow freedom of action, are a necessity.

Walks with Children. Following is a list of things to be observed:

1. Flowers, leaves, berries or seed-vessels, trees, bushes, birds, insects, animals, bees, butterflies, ants, caterpillars, spiders, lizards, frogs, toads, snakes, cats, dogs, goats, chickens, horses, mules, fish, snails, turtles, beetles, dragonflies.

Fruits, vegetables.

Snow, ice, frost, water, soil, dew; fountains and water-power.

Conveyances, buildings, trades, windows, doors.

Wheels, fences, gates, statues; other children, workmen, etc.

The State Agricultural bureaus are very willing to supply information, and sometimes publications, on nature-study. Also, the United States Department of Agriculture can provide many valuable helps.

Home Discipline and Government

Busy Children Not "Naughty." Two things in Froebel's writings are little understood, first, his urgency that when children are considered "naughty" they are often misunderstood, and that the fault is with the adult; secondly, that freedom is the goal and object of education.

Froebel's ideas are expressed at so great length, and with so many digressions, that people often lose his main points.

He insists that when fully employed, with natural occupations and companionship, children are seldom wilful or cross, but that they must be active; if activity is stifled, they will be cross, unhappy and lazy; if it is not guided, it will be perverted to wrong forms, and they will be troublesome. But this is because the adults have not patience and knowledge enough to keep them employed.

It is common experience with kindergarten and other teachers that children who are said to be "very naughty" at home are contented, happy and helpful in school. A little child in a kindergarten who never wanted to go home, said, pathetically: "You see, I'm always good here, it's so easy; but I don't know why it is, I always seem to be naughty at home." The child had no companions at home, and no suitable employment.

"Plenty to do" is the usual solution of the trouble; but there is also another source of it. Froebel constantly reminds us that children are nothing if not imitative, "therefore

be careful, parents, what you say and do in their sight." If we are selfish, cross, and untidy, it is unreasonable to expect children to be otherwise, merely because we *talk* of virtues which we do not practice. "Actions speak louder than words." On the other hand, if love, cheerfulness and regular habits of order in meals, occupations, going to bed and rising are the rule of the home, the child unconsciously imitates and forms habits on these lines.

Freedom under Limitation. As to the freedom Froebel urges, it is, as in all other things, freedom under limitation, and only to be attained progressively, as we become able to use it. The children may have materials, but must keep them tidy and put them away. They may have pets, but must feed and take care of them. They may have romps with father when he comes home, but must be made clean and tidy before he comes. "Every normal child gladly fulfils duties, when he is rightly taught, but these must be clear, genuine and above all, *inexorable*." So says Froebel in his *Mother-Play* book. That is, it is an injustice to the child if in teaching him habits and duties you do not keep him steadily and continually at them. "There must be no vacations" in forming habits. One point which solves many difficulties is to give a choice. "You may have this pleasure or privilege, may stay with us, if you are good-humored, but you must go away by yourself if you are not. Which will you do?" The decision means much in training.

Let us try always to remember that a little child is like a traveler who has arrived in a strange country; many of the words, ideas, customs and laws are unknown or puzzling to him, and if he offends against them it is quite often from ignorance and lack of habit in those directions. Let us form the practice of looking back to our own childhood, especially our childish blunders, fears and troubles, that so we may learn the things which cause these in children, and remember we were as human as they are.

Train to Meet Difficulties. Froebel would not have children, sheltered from difficulties, but trained to meet them. "Yonder," he says, "is a child gliding in a sledge over the snow. His eye is not sure; his hand not strong; he falls. What says his pain? Train your eye, exercise your strength, so that you may avoid a fall. Yonder is a boy skating. Heedlessly his eye wanders; he falls, but happily

only grazes his hand. Collect your mind, fix your eye, rule your feet and legs that you may not fall. . . . As he grows older you, mother, will find many opportunities to show him that without watchful care, slips and falls may easily be serious. Through play, in which he is watched over by your love, and protected by your care, your baby increases *both his strength and his consciousness of strength.*

The consciousness of strength can come only by being helped over and over again to meet difficulties both physical and spiritual.

"On a windy, almost stormy, day, the children go out with their mother Hark, how the weather vane creaks. How the clothes flap and rustle on the line! This delights the children. . . . A little girl is watching the waving handkerchief in her hand. Out runs a little boy with his paper windmill. A third child is flying a kite." "Where does the wind come from, mother, that moves so many things?" "You would not understand if I were to explain to you now, but you can see many things great and small that it can do. Your hand moves, but you cannot see the power that moves it. . . . Hereafter, though you will never see it, you will understand better whence it comes."

Mothers keep children in the house, often from fear of colds and other dangers to health; often from fear of their learning bad habits and manners from other children; sometimes, I fear, because it is inconvenient to go out with them and they are too small to be alone.

Perils of Growing Up Alone. In reality, to a child the danger of growing up solitary is worse for mind and body than any of the perils mentioned. Such children generally become dreamy, and live in a inner world of their own; they often invent imaginary companions to satisfy the craving for real ones; and they frequently form dangerous physical habits, from lack of activity and the indolence of will which is apt to go with indolence of body. Froebel warns us against this.

The imaginary companions never make inconvenient demands; the child may be as selfish, as masterful, as ill-tempered as he pleases, and the playmates of his inner world make no protest. Or these qualities may lie hidden in him and never come to the surface till he meets the real world. Many a failure in business or family life might

be saved if mothers only saw in time the temper or tendency in their children which does not show except when drawn out by the actions of others; and many a natural power and capacity fades away because never aroused or assisted by imitation, competition or the good spirits and interest in life which come with companionship.

Comparisons Drawn from Play. More than one kindergarten teacher has said that in jumping, running, skipping, playing games of skill, etc., the poorest in power and slowest of the children are those who come from the wealthier homes, where they are waited upon, instead of having to help others and act for themselves; or they are only children, who have no stimulus from others at home. You do not know your own child's powers; invite other children to walk and play with him; watch them in games and in exercises or anything that requires effort, and see what are the impulses that need repressing, or the talents needing to be drawn out; whether timidity or hastiness is what prevents successful results.

One child will show timidity in jumping, or in playing with animals, which can be overcome by showing him that his playmate is not afraid. Another will be slow to perceive, and will learn much from what others notice. A third will be discouraged if he fails at first in throwing or catching and will want to give up. If he had no companions, he would never make an effort and would lose both vigor and will power; but the insistence of the others leads him to do more than he would alone. When children begin to help at home, which they love to do when very little, this is a great opportunity for training. Some mothers let them try things beyond their powers and scold or punish them when they drop or break things. A little one who carries breakables or dishes and glasses which may spill over needs to be warned: "Hold tight, open the door, before you carry the dish out; watch what you are carrying to see that it does not spill; walk slowly." These counsels need to be repeated, not once, but many times. "Many a loss comes from anxious care mated with weakness. Draw these pictures from life for your child, as need and occasions call for them." So says Froebel. Of course, this needs love and patience, but what are mothers for but to show love and patience? A mother lamented that her delicate child did

not gain strength and wished she would run more. She was asked whether the child did not run after her ball. "Oh, no," she said, "we always pick it up for her." Another child would not have done this; her adult playmates gave her no chance of exercise.

A strange lack of sympathy and understanding was shown by a mother whose little girl constantly talked to, and of, an imaginary child she called "Dora." The mother said, "I will not have this go on; I cannot stand having her talk as if there were someone here when there is not. I'll stop it." One day she threw down some heavy article with a crash in the room next to where her child was and ran in, saying to her, "Dora is dead; that box fell on her and killed her." This was a real cruelty to the child, whose innocent fancy made her happy, and was no safeguard against the invention of another playmate. The real remedy would have been to invite other children constantly until the dream playmate was "crowded out," or at least, counteracted as to any morbid influence, by the commonplaces of ordinary child-life.

Harmless Animals as Companions. Animals are satisfactory companions because they, too, are generally active, and are nearer the child's level in motives and habits than most grown people, and they are, as a rule, most satisfactory out-of-doors, which is an incentive to the child to go out for fresh air and exercise. However, children in kindergartens keep, and delight in, a range of pets, including birds, fish, turtles, cats and kittens, chickens, white rats, white mice, guinea-pigs, snails, ants, caterpillars and butterflies, toads, frogs, wild bees and pigeons, with occasional visits from dogs. The last can only be properly kept, however, where there is plenty of ground for them to run in.

It is not easy at first to train a child to take good care of pets; but it is wrong to let him leave the responsibility to others. Froebel begs the mother to give her child both the pleasure and the training of caring for, "nurturing," the life of plants and dependent creatures. Nothing, says he, is so valuable and important an influence on the child's character as to be capable of this unselfish, patient nurture, and any mother who truly wishes her child to be his best self will not regret the care and patience needed to train him.

Estimates and Records of Children's Progress

In the former type of work in which all the children used similar material in the same way, it was a simple matter to estimate and record their work. To estimate the work on a fair basis with individual problems and different material is more of a task, but is decidedly worth while. The project type of work is a great advance on former types, and it is therefore essential that recording, measuring and testing devices be used. Several efforts have been made in this direction, and others are in progress.

Testing Materials

Detroit Kindergarten Test; specimen set.—1 examination, 1 manual, 1 record sheet,—10¢.
Detroit First Grade Intelligence Test; World Book Co.
Mental Measure, Myers; The Sentinel, Carlisle, Pa.
Intelligence Examinations, Haggerty; World Book Co.

List of Recommended Books

Beckonings of Little Hands. Du Bois. Lippincott.
Children's Rights. K. D. Wiggin. Milton Bradley Co.
That Boy. Forbush. D. C. Heath & Co.
The Making of Character. MacCrum.
Misunderstood Children. Elizabeth Harrison.
Study of Child Nature. Elizabeth Harrison.
Story of My Life. Helen Keller. Doubleday Page & Co.
Mind and Work. { Gullick
The Efficient Life. { Doubleday. Page & Co.
The Study of Children. Warner. Macmillan.
The Care and Training of Children. S. G. Kerr. M. D. Funk & Wagnalls. New York.
Mentally Defective Children. Shuttleworth & Potts. Blakiston Pub. Co., Philadelphia.
School Records: An Experiment, Mary Marot; Bur. Educ. Exp., N. Y.
Pre-Kindergarten Education, Kindergarten and First Grade; Milton Bradley Co.

All the above can be obtained from the Milton Bradley Co., Springfield, Mass.

Other references may be secured by writing Miss Nina Vanderwalker, specialist in Kindergarten, Bureau of Education, Washington, D. C.

The Primary Department

Suggestions from the Kindergarten. Primary teachers will find suggestions from the kindergarten material valuable for seat work, especially if they have some very young or backward children. However, the regular material is too expensive for large classes, that is, if it is only to be used for seat work, though it is extremely helpful to have several boxes of the "gifts" and beads, if real

connecting class work, as Froebel called it, can be done.

For ordinary work, paper, cardboard, paste, colored chalks and scissors are needed. If possible, clay from a pottery, and paints made from Diamond Dyes should be used for modeling and coloring exercises about once a week.

For Seat Work. For school seat-work the same advertisement and picture pages of old magazines as for the home are useful; the children should cut out pictures of animals, farm work and farm implements, plants, trees, mountains and lakes, etc., anything that will connect with geography and nature study, for scrap-books or wall charts, which last are far better when made than when bought. Old school readers and large calendars, such as are distributed by business

e. g., three, red; two, white, etc., and designs be made with the pieces cut.

A box of Milton Bradley's "gummed paper dots" is useful for the children to paste on cards to make sets of dominoes; this is a good number exercise.

Boxes of toothpicks and shoe pegs may be colored with Diamond Dyes, and used both for number work and for toy furniture. The doll house planned for the home is an equally valuable school training in manual work. Every object in it may be used as an exercise in mensuration, especially the wall-paper and rugs.

Scrap-Books. A scrap-book may be made on any school subject: nature study, history, civics, geography—a scrap-book of famous persons, either foreign or home celebrities, one on current events of importance, on in-



POSSIBILITIES OF THE SAND TABLE

houses, are very valuable in school. The younger children may cut out the words from the readers and the separate letters and numbers from the calendars; they then mount them on small cards, using the words and numbers to make original sentences and examples.

Number Work. For number work, they can also cut the colored squares of paper into halves, fourths and other fractions. Some can be cut into inch squares or thereabouts, which are to be pasted on strips of paper to show number groupings; e. g., a class may show all the possible ways of picturing five, six, ten, etc. Number groupings may also be illustrated with paper chains;

vention and discovery, or on religious studies. There is really no limit to the possibilities in this way.

Pictures may be neatly mounted on cards and sliced into puzzles, or the stiff picture covers of old toy books may be used in the same way; while geometrical puzzles may be made of cardboard squares cut through in various directions. Sets of dominoes and geography card games may be made also.

Sand Table. A sand table for either school or home may be made, by having a wooden strip three or four inches deep nailed round a kitchen table, or any small table; it should be lined with kitchen oilcloth. The lining is needful because the sand must at times be

moistened. The table must have the legs shortened so as to be of proper height for working. In school there is no limit to the use of the sand table. A house and yard, a village of cardboard houses and stores; a farm, with fields and orchards, may be worked out as a neighborhood study, the children collecting the material.

Indian and Colonial Life. Indian life with paper wigwams, a piece of glass or tinfoil for a lake, paper boats and toy or clay people and animals makes a fascinating exercise which will last for weeks.

Colonial life should follow this, and the clearing of the forest, planting of fields and making roads will make pioneer life vivid. Other geographical and historical exercises will easily follow, and the children will eagerly collect bits of wood, stone and bricks, twigs, bark, etc., to fill in the scene. Clay is very helpful here, as most things, not otherwise at hand, can be easily represented with it; Eskimo huts, for instance; colored chalks and paints are useful in this, and also for designing the wall papers, rugs, etc., for the doll house or "Home," as it may be better to call it, for a school exercise.

Nature Study. Nature study on plants, flowers, fruits and birds of the locality should whenever possible be followed by an exercise in representing these in color on the sheets cut from wrapping paper; and large sheets with lists of the birds, plants, trees, etc., which are known should be hung on the wall, and added to from time to time.

Similar sheets with new words and sentences written large in colored chalk may be hung up for review work, and colored chalk is most useful for outlining the difficult elements in misspelled words.

Suggested Material. A cutting board and knife for papers and cardboard is most useful for either school or home, as home-made programs and menu cards, passepartout mountings, etc., can be prepared by its aid; the cost is from \$2.00 to \$5.00, according to size, at Milton Bradley's or supply houses.

Games for Primary Teachers to Use. All the sense games suggested for the home may be used and should be carried further; e. g., with coverings of animals, shell, fur, wool, fish-scale, leather, for touch; with sounds of animals, birds, musical notes and instruments, for hearing; with tastes and smells of natural products, etc. These may be connected with geography and nature study.

A good game to exercise observation is to choose some object of interest, while one child is sent out, and have her guess it from the answers to her questions. These may be made exercises in language.

A good game for language exercise, especially with foreign children, is "Little Travelers." The children leave the room in groups of three or four at a time, telling when they return that, "We have come from 'snowy (or shivering) land,' where the snow was falling." "We have come from 'summer' or 'fanning' land, where people all were 'fanning'." The action must be used with the word.

An imitation game is a pleasant change of position. The children rise from their seats, and standing in the aisles, imitate the action of a child who is chosen to stand in front of the room as leader. A song which may be sung as accompaniment to some simple air is:

"O, a merry band are we,
Standing here so quietly;
What one can do, we all can do!

Let {Susie}
{Willie} show us something new."

Another form of this is "Follow My Leader." The leader may either stand still and dramatize actions for imitation, or may walk, run, hop, march or creep around the room, the others imitating. Animal movements imitated, ponies, ducks, kangaroos, etc., are good gymnastic exercises.

Another good game is "I Went to Paris." The teacher asks "What did you do there?" or "What did you buy there?" and the child replies, dramatizing some action which all must imitate.

This may be played in rows, the first row saying, "I went to Paris, London, etc." The second row asks the question, and receives an answer, accompanied by some action with the right hand. The third row begins with the statement; the fourth row questions the third, and an action with the left hand follows, the children who began the game still continuing the action; the fifth row may add some action with the head or foot.

The old "Quaker" game—

"I put my right hand in,
I put my right hand out;
I give my right hand a shake, shake, shake,
And I turn myself about,"
is a good one for the first grade.

Outline on Kindergarten

I. History

- (1) Origin
- (2) Froebel's ideal school
- (3) Recent developments
 - (a) In the United States
 - (b) In other countries

II. Purpose

- (1) Wise direction of the child's activity
 - (a) In self-expression
 - (b) In relation to others

III. Program

- (1) Singing
 - (a) Rote songs
 - (b) Voice improvement
 1. Image vividly
 2. Enunciate clearly
 3. Singing with good tone
- (2) Rhythms
 - (a) Music appreciation through good music by use of victrola, etc.
 - (b) Interpretation of good music by bodily movements
- (3) Stories
 - (a) Simple stories containing childish interests, appropriate to season—project upon which the group is working
 - (b) Old folk lore and Mother Goose Rhymes
- (4) Games
 - (a) Outdoor apparatus
 1. Swings
 2. Slides
 3. Teeter board
 4. Giant swing
 - (b) Indoor apparatus

1. Rings

2. Ball game
3. Balancing board
4. Physical tests of strength
 - (c) Folk games
 - (d) Sense games

IV. Materials

- (1) Basis of selection
 - (a) Children's own choice—common materials found about the house such as: boxes, crates of all kinds, cloth, string, wood and nails
 - (b) Must be large to avoid nervous strain
 - (c) Adaptability to purpose
- (2) General lists (see page 1953)
 - (a) Furniture, cupboards, pictures, etc.
 - (b) Play apparatus, garden tools, band instruments, balls, house-keeping toys, toys for story illustration, toy animals, wagon, etc.
 - (c) Building materials:—Floor blocks, Froebelian blocks, binder board for roof, etc.
 - (d) Materials for construction, drawing, sewing, weaving, etc.
- (3) Aims
 - (a) To develop self-expression
 - (b) To clarify thought
 - (c) Set by demands of the child's play life
- (4) Method
 - (a) Directed use
 - (b) Experimental
 - (c) Opportunity for choice



WILLIAM LYON MACKENZIE KING
Three times Premier of the Dominion of Canada

Another form of this is played by the rows of children.

1st Row: "Queen Anne's dead."

2nd Row: "How did she die?"

3rd Row: "With one hand going this way."

The fourth row again says, "Queen Anne's dead," and this is continued till hands, feet and head are all "going" as in the "Quaker Dance."

A simple gymnastic play is "See-saw." The children stand together in threes; the middle child stretches out his arms; the two on either side, facing each other, clasp their hands over the "board" he thus makes, then rise and fall by bending and straightening the knees alternately.

Another simple game is the "Swing." Stevenson's verse may be sung:

"How do you like to go up in a swing,

Up in the air so blue?

Oh, I do think it the pleasantest thing

Ever a child can do."

Singing is not necessary, but rhythmic counting is desirable, or

"Swing-swung, the days grow long," may be sung.

The children stand in threes around the room; two face with hands clasped; the third rests his hands upon theirs and pushes them back and forward, as if pushing a swing; after three, or six, swinging movements, each child pushes the "swing" high enough to run under it and goes on to the next one.

Another dramatic game is—

"What can you do?"

A child stands in front of the others, and the teacher asks:

"What can you do?"

He answers: "I can pull ropes, like a sailor," and stretches his arms up, with the action of pulling, the others imitating.

Other suggestions may be:

"I can drum, like a drummer."

"I can saw, like a carpenter."

"I can sew, like a dressmaker."

"I can skip with a rope."

"I can shoot, like an Indian."

"I can ride a bicycle."

Bean-bags made by the children give opportunity for many games. They may be tossed between the children of opposite rows, as in a "potato-race;" tossed by successive children of each row into a chalk circle or paste-board box placed in front of each row; the rows may face the back or

the front of the room, in whichever place there is most space.

The bags may also be passed up and down the rows; whichever row gets all to the end first wins.

A similar game may be played with clothes-pins.

The dramatization of stories is a good exercise, but there should be an effort made to provide action for more than one or two children.

KINEMATICS, that branch of mechanics which treats of motion without reference to mass or to the forces causing the motion. See **DYNAMICS**; **FALLING BODIES**; **STATICS**.

KINETOSCOPE. See **MOVING PICTURES**.

KING, a sovereign who rules over a country by right of succession. In the earliest times the king was absolute ruler and the source of all authority. He was considered the representative of God on earth, and his person was held sacred. But this conception of a king has gradually changed with the growth of the spirit of liberty, until most rulers are now restricted by constitutions; many are subject to removal by a body representing the citizens of a state. No king now holds supreme authority.

KING, WILLIAM LYON MACKENZIE (1874—), a Canadian economist and statesman. He was born at Kitchener, Ont., and was graduated from the University of Toronto in 1895. He studied at the University of Chicago, taught at Harvard and in recognition of his advanced work in economics was given the degree of Doctor of Philosophy. In 1900 he was deputy Minister of Labor of the Dominion, and in 1908 was elected to the House of Commons. A year later he was appointed the first Minister of Labor. He became Prime Minister in 1921, and remained in power continuously, except during the short term of the Meighen Cabinet in 1926, until 1930. In 1935 the Liberals won over the Conservatives; Premier Bennett was retired, and King became Prime Minister.

He has served as member of a commission to Europe to regulate immigration, on the Opium Commission to Shanghai, and as a member of a commission to conduct research into relations between capital and labor.

KINGBIRD, a useful and interesting little flycatcher, common in the United States and parts of Canada from May to September. The winters it spends in Central and South America. It is about nine inches long, is

drab-colored above and white underneath. On the top of its head is a bright red patch of feathers, ordinarily inconspicuous, but when the bird is angry and in fighting mood, as it frequently is in defending its nest, the little red patch rises like a crest, giving the bird a pugnacious aspect.

The kingbird is not musical, but has a pleasing cry of rather robust tone. It has very keen sight, and even when sitting on its nest it keeps a sharp lookout for insects, which it darts out at and catches on the wing. The kingbird is charged with eating bees and is consequently not favored by the bee raiser, though on the whole few birds are of greater assistance to the agriculturist. The eggs are buff brown, covered with fine, irregular lengthwise markings.

KING CRAB. See HORSESHOE CRAB.

KINGFISHERS, a family of birds having long, stoutly-formed, four-sided bills, which

are broad at the base and terminate in a fine, sharp point; short legs, strong feet and somewhat elongated toes. The common kingfisher of Great Britain has a greenish head, back and neck, spotted



BELTED KINGFISHER

with blue, and is a bright blue on back and rump. Its throat is white, and the under surface of the body is pale brown. In North America the *belted kingfisher* is a bluish bird with white under parts, crossed over the breast with a bar of blue. In the female and young this blue band is bordered with chestnut. This bird nests at the end of a long tunnel, which the bird makes in the bank of a stream.

The kingfisher spends most of its time perched on the bough of a tree overhanging the bank of a river. From this place it watches for fish, and as soon as it sees one,

it dives into the water, secures the fish with its feet and carries it to land, where it swallows it entire. This bird has been the subject of many superstitions. People formerly believed that it laid its eggs in a nest and floated it out upon the sea, stilling the waves with its wings. It was then called the halcyon bird, and from its name beautiful days came to be known as *halcyon days*.

KING GEORGE'S WAR. See FRENCH AND INDIAN WARS.

KINGLET, a delicate little bird of the thrush family, olive-green above and yellowish below. Two species are common in the United States, the *golden-crowned kinglet*, which has a stripe of beautiful gold or orange through the middle of its head, and the *ruby-crowned kinglet*, which has a fiery red crest, hidden by grayish feathers except in moments of anger or excitement. Both are common in the Northern states during the period of migration. The ruby-crowned kinglet is one of the sweetest of the spring songsters.

KING PHILIP (?-1676) or **METACOMET**, son of Massasoit, chief of the Wampanoags. Though Massasoit was a steadfast friend of the whites, his son had become suspicious of them and planned an outbreak which for a long time caused terrible loss of life and property. Finally Philip was defeated. After he had taken refuge in a swamp near Mount Hope, he was slain by another Indian.

KINGS, BOOKS OF, two books in the English and one book in the Hebrew canon of the Old Testament. The history, as related in the books of *Kings*, begins with the close of David's reign and carries the events onward to the capture of Jerusalem and the destruction of the Temple. See CHRONICLES.

KING'S COUNSEL, in Great Britain and its dependencies a title of honor bestowed on barristers of distinction. Those who are so honored are privileged to sit within the bar and wear a silk robe. In the United States there is no dignity corresponding to king's counsel.

KINGSLEY, CHARLES (1819-1875), an English clergyman and author. At Magdalen College, Cambridge, he took his degree with high honors. He became curate of Eversley, and later was rector there. His opinions on the social and economic questions of the time are treated in his earliest novels, *Alton Locke*, *Tailor and Poet* and *Yeast*, *A Problem*. In

1853 *Hypatia* was published, and in 1855 *Westward Ho*, both historical novels, the former dealing with the early Christian Church, the latter with the South American adventures of the Elizabethan Era. Among his other well-known works are *Two Years Ago*, *Hereward*, *The Hermits* and *The Water Babies*. He was appointed professor of modern history at Cambridge in 1859 and afterwards was successively canon of Chester and canon of Westminster. Though not a profound thinker, Kingsley was a very versatile writer, interested in social questions and in natural science.

KING'S MOUNTAIN, BATTLE OF, a battle of the Revolutionary War, fought October 7, 1780, between a detachment of Cornwallis's army and a force of backwoodsmen, under a number of partisan leaders, including James Williams, Isaac Shelby and John Sevier. The British were posted at the summit of a hill about a hundred feet in height, but the Americans stormed the position from all sides, killing 119 men, wounding 123 and capturing 664. Twenty-eight Americans were killed, including Colonel Williams, and sixty were wounded. The victory contributed largely to Green's defeat of Cornwallis.

KINGSTON, JAMAICA, the capital of the island, situated on the southeast coast. The harbor is long and wide and forms an excellent anchorage for vessels. On January 14, 1907, the city was visited by an earthquake, which, with the fire that followed, caused a loss of 2,000 lives and much property. Population, 62,000.

KINGSTON, N. Y., the county seat of Ulster County, fifty-five miles south of Albany, on the west bank of the Hudson River and on the New York, Ontario & Western, and West Shore railroads. The city is the center of a large trade in stone, brick, lime, lumber and cement. The city has several libraries, Kingston Point Park and a railroad bridge 150 feet above tidewater. The Senate House is historically interesting as the early seat of the state legislature, when the city was for a time the capital of the state. There are a Federal building, a Carnegie Library and three hospitals. The first settlement was made in 1652 by the Dutch and was called Esopus, from the neighboring Indians. It was a dependency of Fort Orange until organized as Wiltwyck in 1661. Three years later the English took control and changed the name to Kingston. The villages of Ron-

dout and Wilbur were added in 1872, and the place was incorporated as a city. Population, 1920, 26,688; in 1930, 28,088, a gain of 5 per cent.

KINGSTON, ONT., the capital of Frontenac County, on Navy Bay, at the northeast corner of Lake Ontario, 172 miles southwest of Montreal, on the Canadian National and Canadian Pacific Railways. Queen's University, the Royal Military College, the School of Mining, Eastern Dairy School, the Anglican and Roman Catholic cathedrals and a hospital are located here. About a mile west of the city is the Dominion penitentiary. The harbor is accessible to ships of large size. There are manufactories of machinery, locomotives, cotton, leather, textiles and tiles. Hydro-electric power is utilized. There are also large grain elevators. Nearby are large feldspar and mica mines. The city has a number of attractive parks.

In the neighborhood are mineral springs, and the city is a popular summer resort. Kingston was founded in 1783, on the ground formerly occupied by Fort Frontenac, and was incorporated in 1838. Population, 1931, 23,439.

KINGSTON-UPON-HULL. See HULL.

KING WILLIAM'S WAR. See FRENCH AND INDIAN WARS.

KIOTO, *kyō'toh*. See KYOTO.

KIOWA, *kī'ō wa*, a tribe of North American Indians, originally holding land in the old Indian Territory, Colorado and New Mexico. They were opposed to the westward movement of white settlers, and caused the government much trouble before they were overcome, in 1875. After that date they remained peacefully upon a reservation in Oklahoma. By a treaty made in 1901 the surviving Kiowas became in law American citizens. They number about 1,000.

KIPLING [JOSEPH] RUDYARD (1865-1935), a distinguished English poet and writer of fiction, winner of the Nobel Prize for literature in 1907. He was born at Bombay, India, but was sent to England to be educated, and in 1878 entered the United Service College at Westward Ho, Devonshire. Many of the incidents of his life here were afterwards described in *Stalky & Co*. On his return to India he became sub-editor on the *Civil and Military Gazette* at Lahore, which position he held until 1887, when he became assistant editor of the *Allahabad Pioneer*. In 1892, having in the mean-

time suddenly become famous, he visited the United States, where he married Miss Caroline Balestier. He remained in America four years. In 1899 he again visited America and also traveled in South Africa, afterwards settling in England.

Kipling was undeniably the most forceful and original genius among English fiction writers of his generation. He possessed a penetrating insight and a rare facility in seizing the significant and in communicating to his readers, by subtle shades of phrasing, the exact impression he wished to convey. As a prose writer Kipling was at his best in writing of life in India, the long romance *Kim* marking the summit of his achievement in this field. Other stories of India are *Soldiers Three*, *Plain Tales from the Hills*, *The Seven Seas*, and *The Phantom 'Rickshaw*. *The Just-So Stories* and the two *Jungle Books*, highly imaginative stories for children, reveal another facet of this many-sided genius. Kipling's versatility may be best seen by a comparison of the almost brutal realism of *Soldiers Three* and the stories in the collection known as *Many Inventions*, with the supersensual, mystic atmosphere of *The Brushwood Boy*, or *They*.

The originality and fine lyric quality of Kipling's verse has given it a wide vogue. In some of his poems, notably *The Recessional* and *The White Man's Burden*, he so accurately expressed the spirit of British imperialism that he has been called "the Laureate of the Empire." Among those of his titles not already mentioned are *Departmental Ditties*, *The Five Nations*, *Traffics and Discoveries*, *Puck of Pook's Hill*, *Actions and Reactions*, *Rewards and Fairies*, *The Light that Failed*, *Captains Courageous*, *Wee Willie Winkie* and *Other Stories*, *The Years Between* and *Letters of Travel*.

KIRGHIZ, *kir gees'*, a wandering Mongol-Tartar race, numbering in its various branches about 3,000,000 and ranging over Northern Asia from European Russia to China. They are short and square built, have long black hair, scant beards (or none),

high cheek bones, broad flat noses and black, oblique eyes. They are divided into hordes or Nomadic armies and are governed by tribal rulers who have almost unlimited authority. The chief branches are the Kara-Kirghiz and the Kazaks. See **COSSACKS**; **NOMAD LIFE**.

KISHINEV, *ke she nyawf'*, formerly in the Ukraine, Russia, but now a city in Rumania, since its province, Bessarabia, was given to the latter country after the World War. The Rumanians renamed it Chisinau. It is near the Russian boundary. It is a prosperous industrial center, producing tobacco, grain, wool, and other commodities, is the residence of a bishop, and has many schools, churches, and theaters. The city was the scene of terrible Jewish massacres in 1903 and 1905. Population, 1930, 117,016.

KITCHEN CABINET, a name applied to a group of men who during Andrew Jackson's administrations exercised a great influence upon the policy of the government, though they held no important offices. The chief members of this circle were Major William B. Lewis, Amos Kendall, Isaac Hill and Francis P. Blair, Sr.

KITCH'ENER, HORATIO HERBERT, Earl Kitchener of Khartum, of the Vaal and of Aspall (1850-1916), one of the greatest British military leaders of his day. He was born at Croter House, Bally Longford, in County Kerry, Ireland, and educated at the Royal Military Academy in Woolwich. In 1871 he received his commission as second lieutenant of engineers, and was sent to Cyprus and Palestine, where he spent several years in survey work. In 1883 Kitchener was promoted to the rank of captain and assigned to reorganization work in the Egyptian army. He served on the staff of the British expeditionary forces on the Nile in 1884, and subsequently advanced steadily in rank, becoming commander of the Egyptian army in 1892. In 1896, having reached the grade of major-general, he began an active campaign against the Mahdi, then threatening Egypt. The capture of Khartum, in September, 1898, marked the close of a brilliantly successful series of engagements and won for Kitchener the title Baron Kitchener of Khartum. During the Boer War he was chief of staff to Lord Roberts, and when Roberts returned to England Kitchener became commander in chief. After the war he was commander in chief in India for seven



RUDYARD KIPLING

years and in the Mediterranean for a few months. From 1912 to 1914 he was consul-general in Egypt, and on August 5, 1914, one day after Great Britain had declared war on Germany, he became Secretary of State for War, thus assuming supreme command of the army.

Kitchener's great task was to raise a fighting army. Within three months he had a force of 1,250,000 men under arms, and "Kitchener's army" played an important part in stemming the tide of the German invasion. He predicted a war of three years, and fully recognized the magnitude of England's task. It is said that he had a bed carried into the War Office, that he might remain there night and day, and before his death he had raised and trained for service an army of nearly 5,000,000. In June, 1916, while he and his staff were proceeding to Russia on the cruiser *Hampshire*, the vessel was sunk by a German mine off the West Orkney Islands. There were no survivors.

KITCHENER, ONT., in Waterloo County, about sixty miles west of Toronto, on the Grand River and the Canadian National Railway. It is an important manufacturing center, its products including furniture, boots and shoes, trunks, leather and rubber goods and gasoline engines. It owns and operates its street cars and public utilities. St. Jerome's College, founded in 1865, is here. Population, 1931, 30,793.

KITCH'EN MID'DENS, refuse heaps marking the sites of primitive human habitations. Large numbers of such heaps have been discovered in various parts of the world. Those on the seashore are composed chiefly of the shells of edible mollusks. The deposits, first studied in Denmark, have been found to contain fragments of rude stone and bone implements, such as knives, scrapers, axes, hammers, horns and bone needles, and also pottery and the bones of wild animals.

All are relics of the very earliest stages in man's life on the earth. Some of the savage peoples living to-day have not advanced beyond the stage of the early races who left these relics perhaps 10,000 years ago; so that heaps in some parts of the world are still in process of formation. Some of the ancient beds of refuse are enormous and must have taken a thousand years or more to accumulate. There are numerous though very widely scattered deposits in Canada and in the United States.

KITE, a bird of prey belonging to the family of falcons, having a somewhat long, forked tail, long wings, short legs and weak



KITE

bill and talons. It sails and wheels gracefully in flight, often sighting its prey—reptiles, mice, moles, fowls—from high in the air. The birds are useful scavengers. The American swallowtail kite is a beautiful bird with glossy black back, wings and tail, and white head and under parts.



KITES are not only interesting playthings, but of very considerable use in meteorological observations and to some extent in advertising. Before the advent of the airplane, kites were useful in landscape photography from the air. Except for the use first named, they are now principally a springtime plaything for youths in all countries.

Kites have been known since earliest times and in certain countries are still the chief amusement of the people. In Japan kites strong enough to lift a man were made 600 years ago, in order to spy out the force of an enemy in times of war. Not only the youths of Japan but the adults, also, enter into kite-flying with great zest, and some of the kites themselves are beautiful and elaborate productions, decorated with the highest art. In China the kite-flyer often has a number of kites in the air at once, all attached to a

common string, and the greatest skill and patience are necessary to keep them separate or disentangle them when they have been blown together by a strong wind. Fish, butterflies, dragons and birds are imitated in kites by the skilful Chinese, and many of these peculiar forms have found their way into stores of the United States.

How to Make a Kite. Probably every boy has made the common kite, of two crossed sticks, a bit of string, paper, and old rags. If this shape of kite is made with three sticks as shown in the illustration on this page, the kite will fly better and last longer.

Most boys do not remain satisfied with this common kite; they want something different. One of the easiest to make is a box kite. The sticks should be made of straight-grained wood, either spruce, basswood, or white pine. Box kites may be different sizes; the dimensions given below will be found useful for a

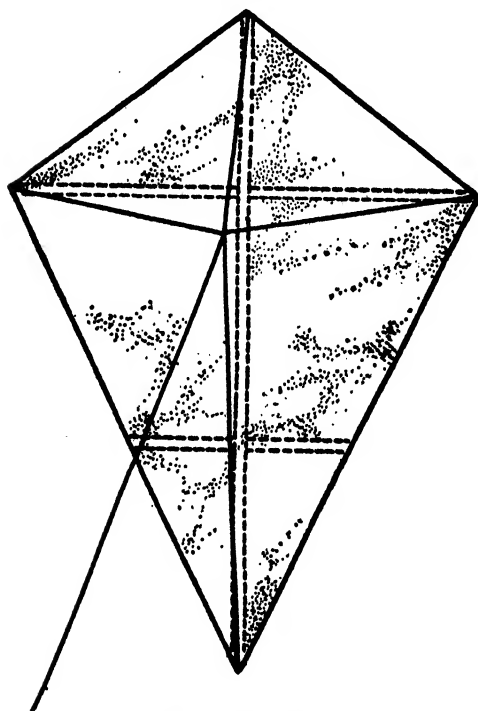
in. Two cloth bands should be made 12 in. wide and 74 in. long. These bands should be fastened to the four long sticks with 1 ounce tacks. Care should be taken to see that the sticks are equally distant, for the sides of the kite must be of the same size. It will strengthen the bands if the edges are hemmed and the ends turned over for half an inch. Nainsook or cambric makes the best cloths, but any light weight stuff will do.

The diagonal braces should be cut a little too long, so that they will be slightly bent when put in position, thus holding the cloth out taut. The ends should be notched to fit the long sticks and then wound with coarse thread or fine wire to prevent the braces from slipping. If made as described the kite may be taken apart and rolled up.

The bridle or guiding ropes should be fastened as illustrated. H is a square knot which may be easily loosened and shifted to a different position on the bridle. A bow-line knot may be tied at J to prevent slipping. For flying in a light wind loosen the square knot and shift nearer to G, thus shortening G and lengthening F; in a strong wind lengthen G and shorten F. If the wind is exceptionally strong it is better not to use the bridle but to fasten the string at K.

Another kite interesting to make is not as common as the box kite; this is the Chinese kite. From a sheet of thin tough tissue paper about 20 in. square the Chinese boy gets a perfectly square kite that is light and strong. First he shapes two pieces of bamboo, one for the backbone and one for the bow. The backbone is flat, $\frac{1}{4}$ in. by 3-32 in. and 18 in. long; this is pasted diagonally to the paper. Over the ends of the stick should be pasted triangular bits of paper to prevent tearing. The Chinese generally use boiled rice, but any quick-drying paste will do. The bow should now be bent and its ends fastened to the other corners of the paper. In cutting the paper it is best to leave little projections at the corner to fold over for this purpose, but separate strips may be used. The difficult task of fastening the band or bridle comes next. This must be done by experimenting, till the kite balances perfectly. The string is fastened by a slip-knot to the band and moved back and forth until the kite flies properly; then the knot must be tightened.

With a little practice boys will have no trouble in flying these kites. Chinese boys often have battles with them. One of them



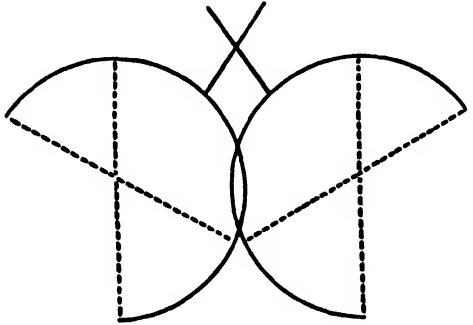
COMMON KITE

kite of a good size. The kite when finished should be 42 in. long by $18\frac{1}{2}$ in. wide. In cutting the cloth and sticks it may be well to allow for errors. The long sticks should be $\frac{3}{8}$ in. square by 42 in. long and the four diagonal braces should be $\frac{1}{4}$ in. by $\frac{1}{4}$ in. by 26

will be flying a pretty kite, perhaps from a low flat-topped roof in some big city. Several hundred feet away on another roof appears another boy, who begins maneuvering to drive his kite across the wind over to the first kite. First he pays out a large amount of string till his kite wobbles to one side, with its nose pointing toward the first kite; then he tightens his line and commences a quick steady pull. If properly done his kite will cross over and above the other. The string is now played out until the second kite is hanging over the first one's line. It will take some skilful work now before the first boy's kite can spear the other one or perhaps cut the kite string. As it is not considered fair to haul down the other boy's kite the battle may be long and exciting.

There is almost no end to the variety of sizes and shapes of kites. An easy one to make is called the butterfly kite. To make this get two thin kite sticks of equal length. Bend each into an arc and tie one end of a strong string to one end of each stick and the other end of the string to a point about 3 in. from the other end of the stick. This leaves one end of each stick free; now tie strings

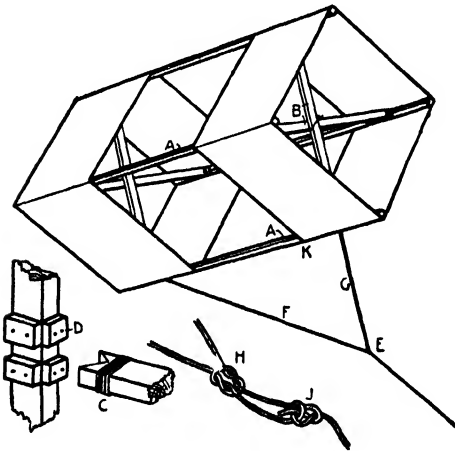
top part of the wing frames near the intersection of the sticks, so that the wires will cross. These are the "antennae" or "feelers." Over this frame paste any colored paper you choose. First lay the paper on the frame,



FRAMEWORK OF THE BUTTERFLY KITE

then cut out the paper to the right shape, but leave about one-half inch margin for pasting. Cut slits about 2 in. apart around the curves and at all angles to keep the paper from wrinkling when it is pasted. When the kite is dry decorate it with paint or strips of colored paper. Add the usual tail.

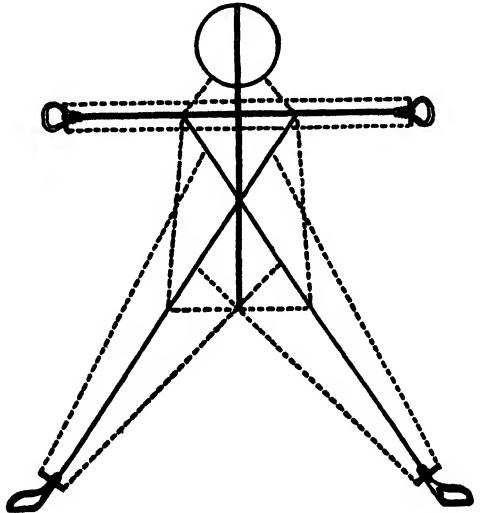
Another interesting kite is the boy kite. To construct the kite use two straight sticks, say 3½ ft. long, to serve as legs and body;



BOX KITE

A, frame, with B, crosspiece; C D, details of joints; F G, bridle; E, string jointed to bridle; H J, knots.

to each of these free ends and tie the other end to a point 3 in. from the opposite arc. Be careful that the two sticks are now in exactly the same shape. Then use thread to fasten the two frames together so that they overlap as shown in the sketch. To make the butterfly's head secure two heavy broom straws or stout wires and attach them to the



FRAMEWORK OF THE BOY KITE

another straight stick about 2 ft. 4 in. long forms the spine; a stick about 3 ft. 3 in. for the arms. If a light tough stick is at hand this can be bent in a circle about 7 in. in diameter for the head; bind the ends firmly with

twine. Fasten it to the spine, then tack on the arm stick three inches below the circle so that the arm stick is divided in the middle. The leg sticks should be fastened to the arm stick about 6 in. on either side of the spinal column and crossed so that the other ends are 3 ft. apart. Small hoops and cross stick of the same material as the head frame should be fastened to both ends of the arm stick and the lower ends of the leg sticks for hands and feet. See that both hands are of equal size; likewise the feet. No boy will want his kite to be a cripple any more than he would want one leg or one arm shorter than the other. The dotted lines in the diagram show how the strings should now be fastened.

To cover the kite select your paper, cut it to the shape of the frame, but allow one-half inch all around to paste over, and make slits 2 in. apart around the head to prevent wrinkles.

KITTIWAKE, a medium-sized, snow-white gull, with pearly blue upper parts, found in great abundance in the cold regions of the northern hemisphere. It takes its name from its peculiar cry. The birds breed among the inaccessible crags of rocky coasts.

KLAMATH, *klah'mat*, a group of Indians, comprising several tribes, who lived originally in Oregon and California, along the Klamath River. The surviving Klamath reside on a reservation along Klamath Lake in Southern Oregon, and are successful stockmen. They number between 600 and 700.

KLEPTOMANIA, *klep toh ma'ni a*, a form of mental disorder which causes the victim to engage in petty thieving. Kleptomanias are sometimes normal in every other particular, but their impulse to steal is overpowering. Usually they take objects that are attractive and highly colored, and there is no attempt to use or sell them. At times the stealing is done with no effort at concealment. In law a kleptomaniac is held accountable for his thefts unless it can be proved that he cannot distinguish between right and wrong.

KLONDIKE, a region in the western part of Yukon Territory, Canada, bordering on Alaska. Whenever the name is heard the thoughts of men turn to the magical word *gold*. It was here that gold mines of great richness were discovered in 1896 by an Illinois man named Cormack; the next year a

veritable procession of fortune seekers headed towards the section. In the one year of 1897 over \$2,000,000 was taken from the mines, and the amount during the next five years exceeded \$30,000,000. Since then the yearly diggings have decreased more than two-thirds in value.

Dawson City (which see) was founded at the time, and it has remained the center of the mining industry in the Klondike region. The town is 2,200 miles from the mouth of the Yukon River.

KNEIPP, *knife*, SEBASTIAN (1821-1897), a German priest who is best known for the "water cure" which he advocated. Sunshine and settled routine of exercise in the open air are important in his system. His patients walk with bare feet in the snow in winter and on wet grass in summer. Establishments of the Kneipp treatment are to be found in many cities, including several in the United States.

KNIFE, *nife*, a tool used for cutting, consisting of a blade and a handle. These are usually made separately and joined. There are nearly as many kinds of knives as there are uses for them. Savages made knives of stone by hewing the edge very thin and giving the blade a rough point. Bone, ivory and horn are used for paper knives, but table knives are made of steel or of bronze and plated with silver. Steel is used for the blades of knives that require a sharp edge. The pocket knife is a Yankee invention and was first made in Connecticut. A pen knife is a small pocket knife with a thin, narrow blade; it was so named because knives of this style were in general use for making quill pens before steel pens became common (see PEN). In sharpening a knife both sides of the blade should be ground alike, and in using it, generally the edge should be turned so as to whittle from the holder. The best results are obtained by drawing the blade slowly toward the point as it is pushed forward through the wood.

KNIGHT. See CHIVALRY.

KNIGHTHOOD, ORDERS OF, the name given to organized bodies of knights. The orders of knighthood are of two classes—associations or fraternities possessing property and rights of their own as independent bodies; and merely honorary associations, established by sovereigns within their respective dominions. To the former class belonged the three celebrated religious orders founded

during the Crusades—Templars, Hospitalers and Teutonic Knights (see **TEMPLARS**, **KNIGHTS**; **TEUTONIC KNIGHTS**; **JOHN**, **KNIGHTS OF SAINT**).

The other class embraces most of the existing European orders, such as the Order of the Golden Fleece, the Order of the Holy Ghost, the Order of Saint Michael. The chief British orders are the orders of the Garter, the Thistle, Saint Patrick, the Bath, Saint Michael and Saint George, the Star of India and of the Indian Empire. The various orders have each their appropriate insignia, which generally include a badge or jewel, a collar, a ribbon of a certain color and a star.

KNIGHTS HOSPITALERS OF SAINT JOHN. See **JOHN**, **KNIGHTS OF SAINT**.

KNIGHTS OF COLUMBUS, a fraternal organization, founded in 1882 at New Haven, Conn., with membership limited to men professing the Roman Catholic faith. Except that it has intimate relations with a great Church it is similar in character to other benevolent organizations. There are four degrees in its initiation ceremony. It furnishes benefits to needy members and promotes the social and intellectual virtues. The chief authority is a supreme council, selected by the state councils. There are about 440,000 members in the United States, Canada, Newfoundland, Cuba, Porto Rico, the Philippines and Alaska. During the World War the Knights worked among the soldiers.

KNIGHTS OF LABOR, a labor organization founded at Philadelphia in 1869. Its operations were secret, but its professed object was the amelioration and protection of the laboring classes. Of late years the membership has largely decreased through internal dissensions and ill-advised strikes, and it has been largely superseded by the American Federation of Labor. See **LABOR ORGANIZATIONS**.

KNIGHTS OF PYTHIAS, *pith'ias*, a benevolent and fraternal organization founded in 1864 in Washington, D. C., the members of which are pledged to help each other at all times. The name refers to the story of Damon and Pythias, whose friendship endured "even unto death" (see **DAMON AND PYTHIAS**). Since it was organized the society has expended more than \$50,000,000 in benefits. There is a supreme lodge, which has control over not only the order of knights, but over the so-called uniform, or military, rank, and over the endowment, or insur-

ance, branch, as well. Three degrees,—page, esquire and knight—are given. The society has a membership of about 850,000, confined to the United States and Canada. There are more than 364,000 members in the Order.

KNIGHTS OF THE BATH. See **ORDER OF THE BATH**.

KNITTING MACHINE. The first knitting machine was the stocking frame, invented in 1589 by an impoverished English clergyman of Calverton, Nottinghamshire. Unaware that his invention was destined to be the start of a great industry, William Lee died in obscurity in France. He had been refused the exclusive right to manufacture his machine in England, but a brother and a former apprentice began making an improved model several years after his death, and machine stocking-making had become an important industry in England by 1640. Modifications and improvements appeared in rapid succession, and mechanical power was successfully applied in the nineteenth century. From that first effort of a humble clergyman, a modern industry has evolved that not only employs its own army of workers, but assures employment to thousands of others by its endless demand for the essential raw material—cotton, wool, silk or rayon yarn. The increased production of hosiery, underwear, caps, gloves, and sport clothes has brought these products within the purse of so many people that the invention can be said to have contributed to the general comfort and happiness of mankind.

The most common form of knitting machine now in use is the circular, or rotary, machine, which knits a circular web. The needles are arranged in rows around a horizontal circular frame. Each needle has a hook at the end, by means of which it draws down the thread and makes a loop as it is depressed. When the needles are again elevated the loop is slipped off over this hook and forms a part of the web as the next hook is joined to it. The needles are upright and have an upward and downward motion, produced by means of cams on the side. The web extends downward within the circle and has a weight attached to its lower end to hold it in position. The machines are automatic and so perfectly adjusted that a boy can tend four of them. They are used extensively in the manufacture of hosiery and underwear and for ordinary purposes goods knit by

machines are serviceable and are becoming increasingly inexpensive.

Women in the home have learned to knit excellently styled garments by hand, and this display of talent has taken a great deal of business away from machine-knitters, for the custom is widespread.

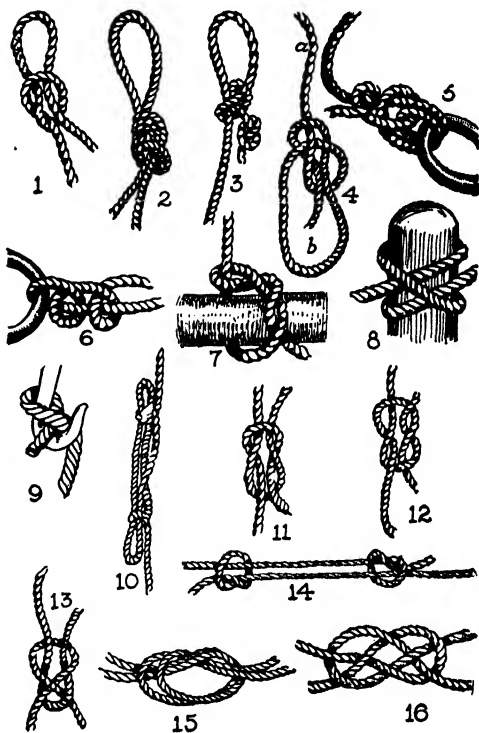
KNOT, *not*, a nautical term indicating distance-marks on a ship's log-line. Formerly the log-line was knotted at intervals to form sections $\frac{1}{10}$ of a geographical mile in length. The line was wound upon a reel and one end of it was attached to a small flat board which was drawn through the water as a kite is sailed in the air. The pressure of water against the board caused the line to unwind slowly or rapidly, according to the ship's speed; and the number of knots run off the reel in a given time indicated the rate at which the vessel was moving. The latest devices are of more complicated mechanism. A rotator, or propeller, drawn through the water in the wake of a ship tends to twist the rope, transmitting the motion to a register. A knot is a nautical mile, or 6,080.27 feet.

KNOTGRASS, a plant of the buckwheat family, one of the most widely-distributed plants in the world. Its many-branched, trailing stems with knotty joints form a thick mat, even on hard or trampled ground. Tiny flowers, two or three in number, grow from the axils of the leaves. Several species of knotgrass yield a valuable blue dye.

KNOTS include the various methods of tying, fastening and joining ropes or cords. The subject of knots is one that has to be mastered by the sailor, who makes dozens of different kinds, but almost all occupations using ropes or cordage have special kinds of knots adapted to their different requirements. While the great majority of these are purely technical, there are a few so generally useful that they may be briefly described. The figures represent the various knots before they are drawn taut, the better to show the method of tying. Generally, the requirements of a useful knot may be stated to be that it should neither slip nor jam; that is, it should hold without danger of slipping while the strain is on it, and when slackened it should be easily untied again.

The simplest knot is the common one tied on the end of a thread or cord to prevent its slipping. By passing a loop, instead of the end of a cord, the common *slip* knot (1)

is formed; and a useful fixed loop is obtained by tying a simple knot, or the *figure-eight* knot (2), on the loop of a cord. One of the simplest and most useful *running* knots for a small cord is made by means of two simple knots (3). The most secure method of fastening a line to a bucket is the *standing bowline* (4); and a *running bowline*



is formed by passing the end *a* through the loop *b*, thus making a running loop. Another good knot to make fast a bucket is the *anchor bend* (5).

Out of the score or so of methods of fastening a boat's painter the one which will be found most useful is the well-known *two half-hitches* (6). The *timber hitch* (7) is useful for attaching a line to a spar or a stone, and the *clove hitch* (8) is invaluable for many purposes. It is very simple and cannot slip. A simple method of fastening a rope to a hook is the *blackwall hitch* (9), where the strain on the main rope jams the end so tightly against the hook that it cannot slip. There are many methods for shortening a rope temporarily, one of them being the *sheep shank*, the simplest form of which is shown in 10.

Of the methods for uniting the ends of two cords, the simplest and one of the most secure is the common *reef knot* (11), which must be carefully distinguished from the *granny* (12), which will jam if it does not slip; the reef knot will do neither. For very small cords or thread the best knot is the *weavers'* (13). The *fisherman's knot* is a very useful one for anglers and is formed by a simple knot in each cord being slipped over the other (14); when drawn taut it is very secure, and it is easily separated by pulling the short ends. A useful method of uniting large ropes is shown in 15; tie a simple knot on the end of one rope, and interlace the end of the other and draw taut. This tie may also be made with the *figure-eight knot*. For very large ropes the *car-rick bend* (16) is the simplest and most secure. The *bowline bend* is formed by looping two bowline knots into each other. See **SPlicing**.

KNOW-NOTHINGS, the popular name for the American party, which was formed in the United States shortly before 1855. The party gained considerable success in that year, lost its ground hopelessly in 1856, and soon after disappeared from American politics as a separate organization. Its distinctive principle was that the government of America must be in the hands of Americans; naturalization was to follow only after twenty-one years' probation, and allegiance to any foreign potentate or power was to be a bar to selection for political office. The term *Know-Nothings* was applied to its members because they refused to tell anything that transpired at their meetings. See **POLITICAL PARTIES IN THE UNITED STATES**.

KNOX, *noks*, HENRY (1750-1806), an American revolutionary soldier, born in Boston. At an early age he entered on a military career, and took part in the battles of Bunker Hill, Brandywine, Germantown, Monmouth, Trenton and Yorktown; was for a time a member of Washington's staff, and was appointed by Washington to receive the surrender of the British forces in New York state. In 1785 he was appointed Secretary of War, and he held the office for ten years. His bravery, skill and constant loyalty to Washington made him one of the commander in chief's most trusted friends.

KNOX, JOHN (1505-1572), the chief promoter of the Reformation in Scotland, was born in Gifford, in East Lothian. He was

educated in Glasgow and at Saint Andrews, became an ardent advocate of the reform faith in about 1542, and four or five years later preached to the beleaguered Protestants in the castle of Saint Andrews. When this castle was taken by the French, Knox was sent to France with the other prisoners and put to the galleys, from which he was released in 1549. Two years later he was appointed chaplain to Edward VI and preached before him at Westminster. On the accession of Mary in 1554, Knox left England and sought refuge at Geneva. Here he was soon involved in a controversy and, after a few months, returned to England, but again went back to Geneva the following year at the request of the congregation which he had left there.

In May, 1559, Knox returned to Scotland and joined the lords of the congregation. He preached at Perth with such fire and effect that his hearers made a general attack upon the churches of the city, overturned the altars, destroyed the pictures, broke the images and almost leveled the monasteries to the ground. He was appointed minister of Edinburgh, and from that time until his death he took a leading part in the proceedings of the Protestants and had the principal share of the work in drawing up the confession of faith which was accepted in 1560 by Parliament. The next year he was involved in a sharp controversy with Mary Stuart, because of her attempt to reestablish the Roman Catholic form of worship in Scotland. In 1569 he retired for a time to Saint Andrews, and three years later his health gave way. Among his works are the *First Blast of the Trumpet against the Monstrous Regiment of Women* and the *History of the Reformation of Religion within the Realm of Scotland*.

KNOX, PHILANDER CHASE (1853-1921), an American lawyer and statesman, born in Brownsville, Pa. He was graduated from Mount Union College, Alliance, Ohio, in 1872, was admitted to the bar three years later, and with the exception of one year, in which he was assistant United States district attorney, was engaged in active practice in his native city until 1901, when he was appointed Attorney-General by President McKinley. This position he retained until June, 1904, when he resigned to accept an appointment to the United States Senate, as successor of M. S. Quay. From 1909 to 1913 he was

Secretary of State in President's Taft's cabinet. In 1916 Knox was elected United States Senator, and died in that office.

KNOXVILLE, TENN., the county seat of Knox County, on the Louisville & Nashville, the Southern and the Tennessee & North Carolina railroads, and on the Tennessee River. The city has two airports. It maintains 350 manufacturing plants that produce beverages, chemicals, medicines, engravings and books, canned goods, feeds, glass, ice, marble products, mattresses and textiles. This is an important jobbing and wholesale center for agricultural products and manufactured goods.

It is the seat of the University of Tennessee, John Tarleton Institute, Knoxville College (for Negroes), the State Agricultural College, the state school for the deaf and a hospital for the insane. The public schools enroll 22,000 pupils. There are 25 parks, 174 churches and four large hospitals.

General James White built the first house on the present site of Knoxville in 1786. Governor William Blount chose the same location as territorial capital and in 1791 signed a treaty of peace with forty-one Cherokee chiefs. The Knoxville Gazette, the first newspaper published in Tennessee, appeared in 1791 and was moved to Knoxville in 1792. Blount College, now the University of Tennessee, was established by the legislature in 1794. Population, 1930, 105,802.

KOALA, *ko ah'lah*, an Australian animal, in appearance somewhat resembling a small bear, hence, sometimes called the *native bear*. It differs from all other quadrupeds in that its toes are divided into groups of two and three. This arrangement enables the animal easily to grasp and hang from the branches of trees. The koala is about two feet long and is covered with a short, gray, woolly fur. It roams at night and feeds on leaves, chiefly of the eucalyptus. Like the kangaroo, the female koala carries her young in a pouch.

KOBE, *ko'beh*, JAPAN, a thriving seaport and residential city on the main island of Honshu, situated on the west shore of Osaka Bay, twenty-two miles from the city of Osaka (see map of Japan, opposite page 243). Adjoining Kobe on the southwest and merged with it for governing purposes is the town of Hiogo. The fine natural harbor of Kobe has been improved and modernized and is one of the busiest of the Japanese ports open to foreign trade. With its beau-

tiful natural surroundings and impressive views of Japan's famed Inland Sea, its unique shops and historic temples, Kobe is the delight of the tourist. In architecture, sanitation and transportation facilities, it compares with the most progressive American cities. It is a great industrial center, with shipyards, paper mills and other manufacturing plants. Population, 1935, 912,179.

KOCH, *koK*, ROBERT (1843-1910), a German physician who has won undying fame as a pioneer in the science of bacteriology. He was born in Clausthal, Hanover, and received his medical degree at Göttingen. He began his investigations of bacteria as a cause of disease while practicing medicine, and in 1875 devised a method of preventing anthrax by means of inoculation, having produced the disease experimentally. In 1882 he made what is regarded as his greatest discovery, identification of the bacillus that causes tuberculosis of the lungs. Dr. Koch later developed a tuberculin that is not a cure for that disease, but a means of diagnosing it. In 1883 he was sent to Egypt to investigate Asiatic cholera, and discovered the causative agent. He also made important investigations regarding the cause and treatment of rinderpest in cattle, and of sleeping sickness, bubonic plague and malaria. In 1905 he received the Nobel Prize in Medicine. See BACTERIA and BACTERIOLOGY; GERM THEORY OF DISEASE; TUBERCULOSIS.

KOH-I-NOOR, *ko e noor'*, the name of the most celebrated of historic diamonds. According to legend, it was in possession of a ruler in India more than five thousand years ago. It first came into history in the fourteenth century, when it was brought to Delhi. At the sacking of this city in 1739 it was carried to Afghanistan, but was returned to India later, and on the conquest of the Punjab it came into possession of the British East India Company, by whom it was presented to the royal family of Great Britain. It has been reduced by successive cuttings, from 793 to 106 carats. While its weight has been largely diminished, its brilliancy has been greatly increased. It has been valued at \$600,000.

KOHL-RABI, *kohl rah'bi*, a variety of cabbage, cultivated for the stem, which swells into a peculiar bulblike growth just above the ground. This part is cooked in about the same way as the turnip, and it tastes much like the rutabaga, or Swedish turnip.

KOKOMO, IND., the county seat of Howard County, on the Wildcat River and on the Pennsylvania, the New York, Chicago & Saint Louis, and the Indiana railroad systems. The city has a commercial airport. Industries number 30 and produce radios, plumbing fixtures, castings, neon signs, auto parts, glass, paper, and stoves. It has a city library, a Federal building, courthouse, and seven parks and playgrounds covering 175 acres. The first automobile, the first aluminum castings and the first pneumatic rubber tires were made in Kokomo. It was chartered in 1855. Population, 1930, 32,843.

KONGO. See CONGO.

KONGO FREE STATE. See FRENCH EQUATORIAL AFRICA; CONGO.

KONIGSBERG, *kö'niKs berK*, GERMANY, a fortified town of Prussia, capital of the province of East Prussia. It is situated on both banks of the Pregel River, about five miles from its mouth, and on the Königsberg Canal, which provides direct water communication with Pillau, its port on the Baltic Sea. Königsberg is the headquarters of the first regional army corps, and a division of the air force is stationed here. There is a thriving export trade in cereals, flour, livestock, cattle products and textile fibers. The manufactures include locomotives, machinery, beer, pianos and amber wares, the last being widely known. The city is the seat of a university founded in 1544, which now has over 2,000 students. Kant, who was born in Königsberg, taught philosophy in the university, and his tomb adjoins the Gothic cathedral. The city dates from the thirteenth century, and was founded by the Teutonic Knights. In the old castle church, built in 1592, two Kings of Prussia, Frederick I and William I, were crowned. Population, 1933, 316,072.

KOODOO, or **KUDU**, the native name of a striped antelope of South Africa. The male has fine horns, nearly four feet long and beautifully twisted in a wide spiral. The koodoo is of a grayish-brown color, with a narrow white stripe along the back and eight or ten similar stripes down each side. It is about four feet in height and eight in length.

KOOFAH. See BOAT.

KOOTENAY, KOOTENAI, or **KUTENAI**, a small family of Indian tribes who lived on the borderland between Montana and British Columbia, and are now living comfortably on their reservations in the same

locality. About 600 are found on the Flathead Reservation in Montana, and about 550 in British Columbia.

KOOTENAY RIVER, a river of British Columbia, which rises in the Rocky Mountains and flows southward into the United States, passing through Montana and Idaho. It then reenters British Columbia, where it flows through Kootenay Lake and thence into the Columbia River. It is about 450 miles long, but only a small part of it is navigable, because of rapids.

KORAN, *ko'ran*, or *ko rahn'*, or **ALCORAN**, meaning *that which is to be read*, is the book containing the religious and moral creed and civil code of the Mohammedans, by which all their transactions are regulated.

According to the Mohammedan belief, the Koran was written in the beginning in golden rays on a gigantic tablet in the highest heavens, and portions were communicated by the angel Gabriel to Mohammed at intervals in the course of twenty-three years. These parts were dictated by Mohammed to a scribe and kept for the use of his followers. After Mohammed's death, they were collected into a volume at the command of Mohammed's father-in-law and successor, Abu Bekr. This form of the Koran, however, was considered to contain erroneous readings, and in order to remove these, Caliph Othman, in the thirtieth year of the Hejira (A. D. 652), caused a new copy to be made from the original fragments and then ordered all the old copies to be destroyed. The leading doctrine of the Koran is, "There is but one God, and Mohammed is his prophet." Adam, Noah, Abraham, Moses, and Christ are also regarded as prophets, occupying a place in the seventh, or highest, heaven, in the immediate presence of God. The belief in good and bad angels, the resurrection and the final judgment are fully set forth. God's mercy, rather than a man's merits secures entrance into heaven. Idolatry and the deification of created beings are prohibited.

The Koran prescribes prayer five times a day, with the face turned toward Mecca; also fasting, alms, and pilgrimage to Mecca. Purification must precede prayer, and where water is not obtainable, dry dust or sand may be used. To give alms was always a characteristic trait of the Arabians, but Mohammed made it obligatory. The language of the Koran is considered the purest Arabic. See MOHAMMEDANISM.

KORDOFAN, *kor do fahn'*, a division of Anglo-Egyptian Sudan, Africa, between Darfur and the White Nile. From 1821 to 1883 it formed one of the Sudanese provinces of Egypt, but at the latter date it was freed from Egyptian rule through the Mahdi's insurrection, and was virtually independent until 1889, when it came under the control of the British Sudanese government. The surface is generally flat, and the soil, barren during the dry season, is covered with vegetation during the rainy season. The climate in the wet season, lasting from June to October, is extremely unhealthy; in the dry season, though healthful, it is intolerably hot. The principal articles of trade are acacia gum, used in making glue, and ostrich feathers. Cultivation is almost wholly confined to millet and sesame. The inhabitants consist of negroes, Berbers and Arabs. The chief town is El Obeid.

KOREA. See CHOSŌN.

KOSCIUSKO, *kahs ki us'ko*, (Polish pronunciation, *kos choosh'ko*), THADDEUS (1746-1817), a Polish patriot who aided the American colonies in their struggle for independence. He was a man of noble family, and after receiving a military education at Warsaw and in France, he became a captain in the Polish army. A love affair led him to leave Poland and go to America in 1776, bearing letters of recommendation from Benjamin Franklin. Washington appointed him engineer with the rank of colonel and, later, general of brigade. Kosciusko did not return to Europe till three years after the conclusion of the Peace of 1783.

For some years after his return he lived in retirement, but after serving in his own country under Poniatowski, he was appointed, in 1794, generalissimo of the insurgent forces, and he defeated the Russians at Raclawice, near Cracow. At the battle of Maciejowice, however, his army was defeated, and he himself was wounded and taken prisoner. He remained in captivity for two years, but was liberated on the accession of Paul I of Russia, in 1796. After visiting England and America, he spent the remainder of his life chiefly in France. In 1817 he issued a letter of emancipation to his serfs.

KOSSUTH, *kosh'oot*, LOUIS (1802-1894), a great Hungarian patriot. He studied law, and in 1832 entered the upper house of the Diet as substitute for an absent member,

where he acquired immediate influence. In 1841 he became editor of the *Pesth Journal*, an exceedingly liberal paper. He was leader of the Hungarian revolution of 1848 and 1849, and was made governor of the short-lived Hungarian republic; however, to promote unity he resigned in favor of Görgey, another revolutionary leader. Soon afterwards the intervention of Russia on the side of Austria brought the revolution to an end. Kossuth fled to Turkey, where he was interned, but was released on the intervention of Great Britain and the United States. In 1851 he visited England and America and was everywhere received with demonstrations of sympathy. When the settlement was effected between Austria and Hungary in 1867 he might have returned to Hungary, but he remained an exile until his death, which occurred in Turin.

KOUMIS, or **KUMISS**, *koo'mis*, a fermented beverage, made in Russia of milk and yeast, but in the United States and England of cows' milk, and on the Asiatic steppes, where it has been long used as a beverage, of mares' or goats' milk. Koumis is a very nutritious and an easily digested beverage, and is recommended by physicians in cases where the stomach will not retain food.

KOVNO, a city in Lithuania, officially Kaunas, capital of the country, though Lithuanians claim that Vilna is their capital. The latter city is in territory claimed and occupied by Poland, and will probably remain Polish. Kovno is in the southern part of the country, 50 miles west of disputed Vilna. Between them runs the boundary line, at present about 20 miles from Vilna. Population, about 100,000.

KRACOW. See CRACOW.

KREISLER, FRITZ (1875-), a violinist, born in Vienna, as well known in America as in Europe. Such was his mastery of the violin that at the age of ten he won a gold medal in Vienna, and at twelve the Premier Prix de Rome at the Paris Conservatory. His first tour of America was at the age of thirteen. During the World War he was a captain in the Austrian army; afterward he returned to the concert stage, with ever increasing fame.

KREM'LIN, the name used to designate the citadel of a Russian city. The most famous kremlin is that of Moscow, situated on the north bank of the river Moskva. It occupies a high triangular piece of land

covering 100 acres, and is surrounded by a wall a mile and a half long. The wall has eighteen towers and five gates. The chief buildings comprising the Kremlin are the Cathedral of the Assumption, in which all the monarchs of Russia since Ivan IV were crowned; the Cathedral of Saint Michael, a former royal burial place; the Cathedral of the Ascension; the Tower of Ivan the Terrible, crowned with a gilt dome and containing thirty-four great bells. Two famous curiosities of the Kremlin are the Czar Bell, with a rim circumference of sixty feet and a weight of 200 tons, cast in 1735, and the enormous Czar Cannon, cast in 1586. Most of the palaces are modern. The famous Kremlin is now the seat of government of Soviet Russia.

KRON'STADT, or **CRON'STADT**, RUSSIA, one of the most important naval stations of the country, situated twenty miles west of Leningrad, at the eastern end of the Gulf of Finland. It has three harbors, which will accommodate a thousand vessels. These harbors are closed by ice during five months of the year. Kronstadt was founded by Peter the Great in 1710. Here were established a naval school, government navy yards and cannon foundry, building yards and saw-mills. Population, 70,000.

KROPOTKIN, or **KRAPOTKIN**, PETER ALEXEYEVITCH, Prince (1842-1921), a Russian geographer and anarchist, born at Moscow. Though intended by his father for court life, he entered the army as a member of a Cossack regiment in 1862 and while stationed in Siberia made numerous valuable geographical explorations. The policy of the Russian government toward prisoners in Siberia embittered Kropotkin, and it was not long before he had openly espoused the anarchist cause. His convictions upon social and political matters were confirmed by a visit to Finland. Soon afterward he devoted himself to spreading anarchist doctrines in Russia, was imprisoned, escaped to England and finally reached Switzerland, where he continued his propaganda.

1879 he founded *Le Révolte*, the official organ of the anarchists at Geneva. Expelled from Switzerland, he continued his work in France, where he suffered three years' imprisonment. Later, he lived in England. His principal works were *Memoirs of a Revolutionist*, *Law and Authority* and *In Russian and French Prisons*.

KRUGER, *kroo'gur*, STEPHANUS, JOHANNES PAULUS (1825-1904), the great Dutch President of the former South African Republic. As a boy he migrated to the Transvaal with his parents and other Cape Colony Boers who were dissatisfied with the British colonial policy. There he grew up, on the borderland between civilization and savagery, in constant conflict with the natives. He became prominent in administrative affairs, and in 1872 was made a member of the executive council of the Transvaal. Five years later, in spite of Kruger's vigorous opposition, the Transvaal was formally annexed to British territory, but he steadfastly refused to be reconciled.

In 1883 he was elected President and he was successively reelected in 1888, 1893 and 1898. Kruger used all his influence against the growth of Great Britain's power in South Africa, and in 1884 succeeded in obtaining a considerable reduction in its powers. He was also successful in defeating the Jameson raid in 1896. He believed that war with Great Britain was inevitable, and had his country equipped with arms and ammunition long before the struggle began. When the British approached Pretoria in 1900, Kruger moved his capital eastward and in September crossed into the Portuguese possessions, whence he sailed for Europe in October. He made several attempts to secure the assistance of the European powers in putting an end to the war, but without avail, and he finally took up his residence at The Hague, where he died.

Related Articles. Consult the following titles for additional information:

Jameson	Leander	Starr	Transvaal
South African War		Union of South Africa	

KRUPP, FRIEDRICH ALFRED (1854-1902), grandson of the man who founded the greatest munitions works in Europe. Upon the death of his father, who had inherited the great Krupp establishment in Essen, he undertook the direction of the works and vastly increased the capacity of the business. He invented a new bessemer steel, out of which he made rifles and cannons and a seamless tire for car wheels, and discovered a new method of hardening armor plate. At his death he was the richest man in the empire. He was well known for his generous dealings with his employes, having built for them comfortable modern dwellings, each with its garden, and provided a pension fund of over \$4,000,000 for their benefit.

His daughter Bertha, who succeeded to the business, displayed a talent for practical business management. In 1906 she married Dr. Gustav von Bohlen, who became manager of the works, assuming the name Krupp von Bohlen und Halbach. After the war, the works were converted to making agricultural machinery, railway equipment and other steel products.

KRYOLITE. See CRYOLITE.

KRYPTON, *kript'on*, a gaseous element resembling argon and helium, which exists in the air. As only minute quantities have been obtained, very little is known of its properties; however, it has been liquefied and even solidified. It is estimated that the atmosphere contains only one part in a million. Krypton boils at -152° C. When an electric spark is passed through it, it emits a yellowish-green light.

KUBELIK, *koo'be leek*, JAN (1880-), a Bohemian violinist. He received his early education under his father and entered Prague Conservatory when twelve years old. In 1898 he made his first public appearance and two years later made his debut in Berlin and in London. Thereafter he made several tours of both Europe and America, where he created a furor by his remarkable technique, which surpasses his interpretative abilities.

KUBLAI KHAN, *koob ly kah'n'*, more properly, KHUBILAI KHAN (1214-1294), a Mongol emperor of China. In 1259 he succeeded his brother as grand khan (ruler) of the Mongols, and in 1260 conquered the whole of Northern China, driving out the Tartar and putting an end to the Kin dynasty. Marco Polo, who lived at the court of this ruler, described the splendor of his palaces and of his court; the elaborateness of his entertainments and hunting expeditions; his revenues; his extraordinary paper currency, and his extensive system of posts. Kublai Khan is the title of a beautiful poetical fragment by Coleridge.

KUDU, *koo'doo*. See KOODOO.

KUFIO. See CUFIO.

KU-KLUX KLAN, a secret society which existed in some of the Southern states of America, immediately after the Civil War. Its primary object was to intimidate the negroes, who, it was said, at the close of the war were demoralized and in need of restraint. It had thousands of members, who operated under disguise and usually at night. Conflicts were frequent between the members

of the Klan and those of the Loyal League, a secret political organization of the negroes, formed under the direction of politicians. In the beginning many of the best citizens of the South belonged to the society, but these withdrew as the Ku-Klux degenerated into a lawless band. In 1872 the government succeeded in breaking up the organization.

In 1916 a new Ku-Klux Klan, patterned largely after the old society, was organized in Atlanta, Georgia, and by 1921 had secured a large membership. On the theory, widely accepted, that it aimed at white supremacy, was anti-Catholic and anti-Jewish, therefore inimical to political justice and religious freedom, it was violently opposed, and its operations were given wide and unfavorable publicity.

KUMISS, *koo'mis*. See KOUMIS.

KUMQUAT, *kum'kwot*, a very small variety of orange tree, growing not above six feet high, whose fruit, of the size of a large gooseberry, is delicious and refreshing. It is a native of China and Japan, but has been introduced into Australia and the United States. Florida produces almost the entire American output; it is also cultivated in Alabama and California.

KURDISTAN, *koor dis tahn'*, an extensive region with indefinite boundaries, lying south of Armenia, in the western part of Asia. The region is at present divided among Turkey, Iraq and Persia with no well-defined boundaries in either country. Previous to the World War Kurdistan formed a part of Turkish and Persian dominions, and during the war the northern part of the country was the scene of bitter fighting between the Turks and the Russians. Before the collapse of Russia the forces of that country had penetrated to the Lake Van region, in the vicinity of Bitlis. The disposal of this great region was settled by the peace conference.

The Kurds, to whom the territory owes its name, are not confined within its limits, but are found in considerable numbers eastward in Khorasan and over the hilly region of Mesopotamia, as far west as Aleppo and the Taurus. They are a stout, dark race, well formed, with dark hair, small eyes, wide mouth and a fierce look.

KURILE, *koo'ril*, ISLANDS, a group of volcanic islands belonging to Japan, stretching between the peninsula of Kamchatka, on the eastern coast of Siberia, and the Japanese island of Yezo. There are thirty-one is-

lands in the group; their area is 3,944 square miles, and their population is estimated at 3,000. The islands were discovered by a Dutch navigator, and were later held by Russia (from 1766 to 1875). In the latter year they were ceded to Japan in exchange for the northern half of the island of Sakhalin. In 1899 a Japanese trading company began to develop the Kuriles; the chief products are timber, fur and fish.

KURO SIWO, *koo'ro se'vo*, or **JAPAN' OURRENT**, the name of a warm current in the North Pacific Ocean corresponding in position and general direction to the Gulf Stream in the North Atlantic. It flows past Formosa, Japan, the Kuriles, the Aleutian Islands and thence bends southward to California. It is much inferior to the Gulf Stream in volume and is of a lower temperature. See OCEAN CURRENTS.

KUSKOKWIM, *kus'ko kwim*, **RIVER**, a river whose source is in the glaciers of the McKinley Mountains, and next to the Yukon the largest stream in Alaska. It is 700 miles long, and drains an area nearly equal to that of Alabama. The Kuskokwim follows a southwesterly course and empties into the Bering Sea. Steamboats ascend the stream for a distance of 500 miles, and several na-

tive settlements have been established in its valley, as well as numerous mining camps and trading posts.

KUTENAI, *koo'ten i*. See KOOTENAY.

KY'ANITE, a mineral of the garnet family, found both massive and in regular crystals. Its prevailing color is blue, of varying shades. The best specimens take a high polish and are used for table tops, ink stands, paper weights and other ornaments. Kyanite is found in the United States in Massachusetts, Connecticut, Delaware and Virginia, and in Europe in Switzerland, Tyrol and Bohemia.

KYOTO, or **KIOTO**, *kyo'toh*, **JAPAN**, a city on the island of Honshu, in an extensive plain 230 miles southwest of Tokyo, with which it is connected by railway. It was formerly the special residence of the mikado and the seat of his court, and the chief buildings are the old imperial palace and the residence of the shogun. It is the center of religion, of learning and of artistic manufactures, such as carved ivory ornaments, lacquered ware, bronze ornaments, brocaded and embroidered silks, porcelain and cloisonné ware. Kyoto has many good schools and an imperial university. Population, 1930, 765,142.



L, the twelfth letter of the English alphabet, derived in form from the Phoenician, through the Greek and Latin. *L* has only one sound in English, but is silent in a few words, as *half*, *talk*. Its nearest allied letter is *r*, and there is no letter, accordingly, with which *l* is more frequently interchanged, instances of the change of *l* into *r* and of *r* into *l* being very common in various languages. In fact, in the history of the Indo-European alphabet, *l* is considered to be a later modification of *r*.

LABIATAE, *la be a'tee*, the botanical name of the mint family, a very important and extensive group of plants, so named because most of the flowers present prominent upper and lower lips. The name is derived from the Latin *labium*, meaning *lip*.

The labiatae have a four-lobed ovary, which changes into four seedlike fruits. There are about 3,000 species, mostly herbs or small shrubs, with opposite or whorled leaves and usually square stems. They are found throughout the world in temperate latitudes. Many, such as lavender and thyme, are valued for their fragrance; others, such as mint and peppermint, for their stimulating qualities, and still others, such as savory, basil and marjoram, as aromatics. Many of them possess bitter tonic qualities, and not a few bear beautiful flowers, that make them favorite garden plants.

LABOR, DEPARTMENT OF, one of the executive divisions of the United States government, whose head, the Secretary of Labor, is a member of the President's Cabinet. The Department came into existence March 4, 1913, on the day that Woodrow Wilson became President of the United States. The object of the Department of Labor is—

"... to develop the welfare of wage earners of the United States, to improve their working conditions, and to advance their opportunities for profitable employment."

The Department includes the Conciliation Service that is offered in case of trade disputes; the Bureau of Labor Statistics; the Immigration and Naturalization Service; the Children's Bureau; the Women's Bureau and the Employment Service. Publications include the annual reports, bulletins and leaflets, and the *Labor Information Bulletin*.

The Secretary of Labor is empowered to act as mediator in labor disputes or to appoint commissioners of conciliation in such cases. See **CABINET**.

LABOR, DIVISION OF. In days which can be recalled by the oldest people now living one man made all of a shoe or boot, all of the ironwork or woodwork of a plow, or an entire suit of clothing. The stress of competition has changed this condition, and today one man makes only one part of a shoe or boot, and he does that part by the use of a machine; one man makes only one small part of a plow, and in clothing factories one man's work is limited day by day to work on only one portion of a suit of clothes. Each workman in the olden time was an all-round master workman; to-day in a highly specialized factory he knows nothing about any part of the manufacture of an article excepting that portion he has been taught to make. This new plan in manufacturing is called division of labor.

There are two reasons for this evolution in methods. The introduction of modern machinery limits the activity of one man to one simple operation, wherein he becomes expert in a briefer time than would be possible if he had to learn a series of other operations, also. This results, too, in time-saving and in reduced cost of production without decreasing the workman's earning capacity. On the other hand, such working conditions discourage individual initiative; doing the same thing day after day tends to make of

a person a human machine and to destroy his ambition. Division of labor, however, cannot be abandoned, for the increasing use of intricate machinery in production compels specializing to a greater degree year by year.

LABOR DAY, a day set apart in the United States, Alaska and Canada in honor of organized labor. All places of business are closed, and the celebration of the holiday is marked by parades, public meetings in the interest of labor, and similar demonstrations. In most places the first Monday of September is observed, but in New Orleans the day is celebrated on the fourth Saturday of November, and in North Carolina on the first Thursday of September. Labor Day is legalized by Congressional action only in the District of Columbia. The legislatures of most of the states have taken action to make it a legal holiday, and in the others it is observed by proclamation. The custom of observing such a day had its origin in a labor celebration held by the Knights of Labor in 1882. In Europe May 1 is observed in like fashion.

LABOR LEGISLATION includes all laws which affect the relations of employers and employes. During centuries when small factories were the rule and the employer and a dozen workmen labored together and were bound by ties of more or less intimacy, legislation defining their respective rights was unnecessary. To-day a corporation may have thousands of employes; the managers know but a few score of them, and there is total lack of close relation and feelings of comradeship.

Abuses eventually crept into the operations of large enterprises, such as too long hours of labor, disregard of sanitary conditions in factories, child labor, and lack of reasonable safeguards against accidents, with consequent disasters resulting in injury or death.

With the disappearance of the paternalistic attitude workmen began to combine for their common good (see **LABOR ORGANIZATIONS**) and to bring pressure upon legislatures for remedial laws. Governments were called upon to protect the workmen. As early as 1802 the first laws relating to factory legislation were passed, in England and Germany. To-day such laws are on the statute books of nearly all states and provinces. Particularly insistent has been the demand within recent years for laws limiting the working day to fewer than eight hours.

Much had already been accomplished toward shorter hours than had prevailed when in 1916 the United States Congress passed the Adamson railroad law which provided an eight-hour day for over 400,000 trainmen.

This law largely influenced action in other labor fields. In the United States and Canada all government work is on the eight-hour basis; eight hours has been a legal day's work in Australia and New Zealand for many years. Europe is most backward. Labor in the United States now seeks a 30-hour week.

More recent are efforts to restrict child labor and to make employers liable for accidents to workmen due to negligence or refusal to equip their factories with reasonable safeguards. The accounts of these phases are given in the articles **CHILD LABOR**; **EMPLOYERS' LIABILITY**.

LABOR ORGANIZATIONS, societies of laboring men organized to obtain mutual benefit and protection. These organizations are of two classes, those organized within separate trades, for the purpose of obtaining benefits for the workmen within those trades alone, and those admitting workmen of all trades and classes, for the purpose of improving the condition of laboring men as a whole. The methods of these two classes of organizations differ in accordance with these purposes. The former rely chiefly upon such direct influences as strikes or collective bargains, while the latter depend upon more indirect means, such as agitation and political action. The former, or *trades unions*, were organized first, appearing in England about the middle of the eighteenth century, and were the result of natural evolution from the ancient guilds (see **GUILD**). They did not attain great influence in the United States until about 1830. During the period from 1830 to 1850, the tendency was toward the formation of general organizations rather than trades unions, but after 1850, which marks the appearance of the Typographical Union, laborers in almost every line of trade organized separate local unions.

About 1865 a reaction set in, marked by the organization, in 1869, of the Knights of Labor, a general society admitting members of all classes of labor, and including, when at its height, probably 200,000 workmen. Its influence in politics was at times notable, but this very activity also brought it into disrepute, and after about 1885 it gradually lost

influence. It was eventually superseded by the American Federation of Labor. This organization, founded about 1887, consists of the federation of trades unions, and it rapidly gained strength, until 1932 it included nearly 30,000 local unions, with a membership of more than 2,100,000. Its policy was, at first, to keep out of politics, but to maintain a continuous agitation through the general and special press and to obtain its demands by means of strikes and conferences. Later, it entered politics, devoting itself to securing election of candidates favorable to labor. The National Recovery Act (NRA) in 1933 favored unionism, and within a year membership was increased 1,600,000. (NRA was declared unconstitutional in 1935.)

There was once a great deal of distrust of labor unions, particularly in the United States, owing to the class of men who in earlier days controlled them. These men were often unworthy of the confidence of their fellow members or of the public, and their motives were frequently mercenary. Labor men gradually have discovered that their interest lies in placing men in power in their councils whose careers entitle them to public respect and who are intelligent leaders. Under such men the public has come to have a better understanding of the position of labor unions with respect to the vital questions that are pressing for solution, and their influence has increased remarkably. Particularly important among such men in the present generation have been Samuel Gompers, John Mitchell, and William Green.

Related Articles. Consult the following titles for additional information:

Debs, Eugene V.	Labor, Division of
Factory Legislation	Labor Legislation
Gompers, Samuel	Mitchell, John
Green, William	Open Shop
Knights of Labor	Sabotage
Labor Day	Strike
Labor, Department of	Syndicalism
	Wages

LABRADOR, *lab'ra dawr*, a large area of Eastern Canada, lying along the Atlantic coast from Hudson Strait southeast to Newfoundland, to which it is attached politically. Its original area of some 120,000 square miles was increased by the addition of over 112,000 square miles when in 1927 by decision of British Privy Council the western limits were extended to include the Atlantic watershed, thus ending an old dispute with the Dominion of Canada over its western boundary line. Its population scattered along the seacoast numbers about 4,000.

The natives are chiefly Algonquian Indians in the South and Eskimo in the north. Only in the few settlements are white people found. The most important person in Labrador is Dr. Wilfred T. Grenfell (which see).

There is no agriculture in Labrador, for the summers are too short to permit any crops to mature. Animal life supplies meat; other foodstuffs are shipped to the country. In the north are found mosses and lichens only; farther south there are such trees as the pine, birch, poplar and willow. The only domesticated animals are dogs and reindeer, and they are the beasts of burden and the only means of transportation except canoes.

LABRADOR CURRENT, a cold current which is so named because it flows southward from the frozen north along the coasts of Labrador. It starts in the Arctic Ocean and is a distinct current until it merges with the Gulf Stream in the vicinity of Newfoundland. This current affects the climate of Labrador very noticeably, the harbors being ice-bound half the year. Those of the British Isles, which are washed by the Gulf Stream and are across the ocean in the same latitude, are never blocked by ice. The heavy fogs off the coasts of Labrador and Newfoundland are the result of the cooling effect of this current on the air.

LABRADORITE, *lab ra daw'r'ite*, a variety of feldspar, which consists of aluminum, calcium and sodium silicate. It occurs in cleavable or granular masses, and is an essential constituent of the early eruptive rock, such as basalt, dolorite and diabase. It abounds on the coast of Labrador, where cleavable varieties occur in enormous masses of changeable colors, ranging from dull gray to gorgeous blues, greens, copper red, purple or yellow. Large quantities of the mineral are also found in the Adirondacks. Labradorite is used as an ornamental stone, especially in inlaid work.

LAB'RADOR TEA, a popular name for a small evergreen shrub, a species of *ledum*. It grows in the swamps and bogs of Greenland and in the extreme northern part of North America. The leaves are tough and have dense brown furry substance on the under side. They are used by the natives of Labrador as a substitute for tea.

LABURNUM, a small tree of the pea family, which grows native in most mountainous parts of Southern Europe. On account of its glossy foliage and its large hang-

ing clusters of yellow flowers it is much cultivated in gardens and parks throughout Europe. It grows rapidly and sometimes attains a height of forty feet. The wood, of a dark brown or dark green color, is hard, fine-grained and very heavy, and is used for cabinet work. The leaves, seeds and bark are poisonous.

LABYRINTH, *lab'i rinth*, a structure having numerous intricate winding passages, difficult for a person to find his way through. Out of the legendary labyrinth of Crete, Theseus found his way, guided by a thread. The Egyptian labyrinth was a building situated in Central Egypt, above Lake Moeris, in the district now called the Fayum. The building, half above and half below the ground, contained 3,000 rooms, in all probability intended for tombs.

In gardening, a labyrinth, or *maze*, is an intricate system of pathways through dense, impenetrable shrubbery, in which those who enter may walk for hours in an effort to find the center or an exit. The name is also given to an intricately designed series of paths set apart by wooden partitions in which people may lose themselves. Such structures are common in pleasure resorts.

LAC, *lak*, a general name designating the various products of the lac insect. These insects, of which there are about 5,000 females to each male, live upon the twigs of certain trees. They attach themselves to the bark, pierce it with holes and draw out the resinous juices, upon which they feed. They secrete a resinous substance through the pores, become glued to the twig, and after a time die, their bodies forming tiny mounds over the myriads of minute eggs. When the eggs hatch the young dig their way out and swarm over the branch, giving it the appearance of being covered with red dust. Immediately they begin secreting the lac, repeating the life-history of the parent.

In time the bark may become covered to a depth of half an inch with gum. The lac encrusting the twigs is gathered and dissolved in hot water. It is then strained through canvas and poured out in shallow receptacles to thicken. The thin, hardened layers are known as *shellac*. Lac forms the basis of varnishes and cements, and is the principal ingredient of sealing wax. The water in which the crude lac is washed is evaporated and from the residue lac dye, resembling cochineal, is produced.

LAC, or **LAK** (from Sanskrit *laksha*), an Oriental term signifying 100,000. In the East Indies it is especially used to denote denominations of money. Thus, a lac of rupees means 100,000 rupees.

LACCADIVE, *lak'ka dive*, **ISLANDS**, a group of coral reefs and islands in the Indian Ocean, about 200 miles west of Malabar, belonging to British India. The islands are small, none of them exceeding a mile in breadth; the total area is about eighty square miles. They are low and flat, and are covered with cocoanut groves. Only eight are inhabited. The natives, called Moplabs, of mixed Hindu and Arab descent, are Mohammedans. They live on cocoanuts, coarse grains, pulse, plantain, vegetables and fish. The men are bold seamen and expert boat builders. Quantities of cocoanut fiber are exported. Population, approximately 14,500.

LACE, *lase*, a delicate kind of network, formed of silk, flax or cotton thread, used for decorative purposes. Hand-made laces are divided into two classes, *needle-point* and *bobbin*, or *pillow*. The former is made with a single thread and a needle; the later is made with several threads attached by pins to a cushion or pillow, each thread being wound on a small bobbin. Specimens of the early Venetian point lace may still be seen in collections. The *point d'Alencon* is the most expensive and complicated of modern needle laces. Among the cushion laces are the Honiton, made in England; Mechlin, made in Germany; Valenciennes and Chantilly, made in France, and Duchess lace, made in Belgium at Bruges; there are, besides, the celebrated Brussels, Venetian and Florentine laces. Guipure lace consists of a network ground, on which patterns are wrought in various stitches with silk. It was originally made in silk, gold or silver thread on little strips of parchment or vellum.

Machine-made lace is now produced in great quantities, and finds a ready market because of its moderate price. Some of the high-grade laces made by machinery are so nearly like the hand-made that the two can scarcely be told apart.

LACE-WINGED FLIES, a large family of insects, so called because of their gauzelike, net-veined wings. The commonest is a green or yellowish-green insect with a disagreeable odor. The larvae (young) are short grubs, with tuberculated, hair-tufted bodies, and they feed largely upon plant lice.

LACHESIS, *lak'e sis*. See FATES.

LACHINE, *la keen'*, QUEBEC, the location of Lachine rapids, on the Saint Lawrence, which are avoided by means of a canal from Montreal harbor to a point above them. An enormous electric power is developed here. Population, 1931, 18,630.

LACHRYMAL, *lak're mal*, **GLANDS**, the glands by which tears are secreted. There is one for each eye, and it is situated in a depression in the upper and outer part of the orbit. The fluid secreted is distributed over the inner surface of the upper eyelid by a number of minute ducts, and is just enough at ordinary times to keep moist the mucous membrane and conjunctiva, or membrane that lines the lid and covers the ball of the eye. After being spread over the eye by the upper lid, this fluid passes through two small openings near the inner angle of the eye into the lachrymal sac. This is the upper opening of the nasal duct, a small tube about a half inch in length that conducts the fluid to the back nasal passage. The secretion of an unusual amount of fluid, such as is caused by irritation of the eye or excessive grief or joy, overflows the lower lid in the form of tears. See EYE.

LACKAWANNA, *lak a wahn'nah*, a river in Pennsylvania which rises in the northeastern part of the state and flows into the Susquehanna, between Pittston and Wilkesbarre. It is about fifty miles in length, and is important chiefly because of the valuable anthracite coal beds in its valley. Scranton is the chief city on its banks.

LACONIA, *la ko'ni a*, the ancient name of a district of Greece, of which Sparta was the capital. It occupied the southeastern division of the Peloponnesus and comprised about 1,048,000 acres. The country is wild and rugged, broken by two mountain ranges, the Pentadaetylon, in the west, and the Malevon, in the east. Between these lines the valley of the Eurotas, the largest river of the district, which flows southward into the Gulf of Laconia. The island of Cerrigo (Cythera) lies to the southeast. The coasts are rocky and dangerous, and there are few harbors. Laconia was the realm of Homer's hero, King Menelaus. The district is now divided into two departments of modern Greece, Lacædaemon and Laconia, the respective capitals being Sparta and Gythium.

LACONIA, N. H., the county seat of Belknap County, 103 miles north of Boston, on

the Winnepesaukee River, between Lakes Winnisquam and Winnepesaukee, and on two lines of the Boston & Maine Railroad. There is a landing field. It is a prosperous manufacturing city, producing hosiery, lumber and foundry products, paper boxes, shoes, and knitting machinery. The beautiful lake region, with its cool climate and good fishing, has made the place a popular resort. The chief buildings are a public library, a hospital, the state home for feeble-minded children, an armory, and a state fish hatchery. The place was settled about 1780; it was incorporated in 1852 and the city was chartered in 1893. Population, 1920, 10,897; in 1930, 12,471.

LACQUER, *lak'ur*, the name applied to colored, sometimes opaque, varnishes used as a finish on metal or wooden objects. Properly it is used to designate surfaces treated with a varnish of which resin lac is the basis. It is much used as a finish in the East. In Japan, however, from which comes the most exquisite so-called lacquer, the varnish is made from the sap of the varnish-tree. Even ordinary Japanese lacquer ware is prepared by a very tedious process, requiring about thirty distinct operations and about twenty days, fifteen or more coats of varnish being put on. The finer lacquer, consisting of even more coats, is polished with calcined deer horn, finely powdered, and oil. This remarkable lacquer constitutes a very hard surface, one which stands a high degree of heat. The Japanese use lacquered vessels for hot soups and hot alcoholic drinks. The best lacquer is very expensive, but there are many cheap imitations.

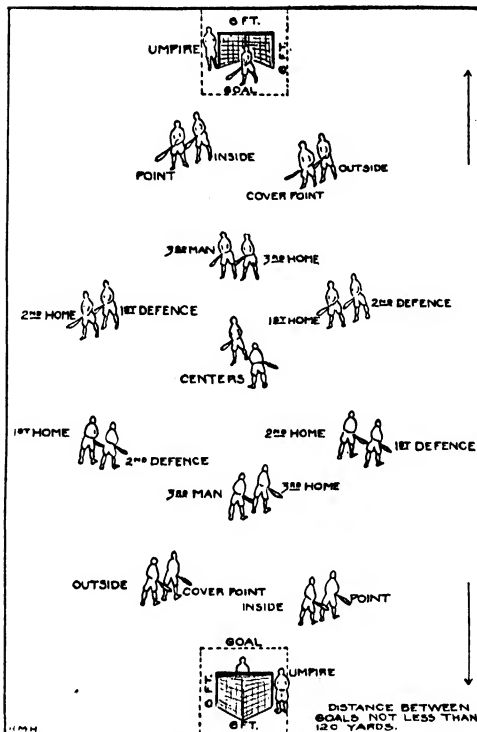
LACROSSE, *la kross'*, a national game in Canada, which undoubtedly originated among the North American Indians. The name was applied to the sport by the early French explorers, who noted the resemblance of the hooked stick to a bishop's cross. The *cross* is a light stick, five or six feet long, crooked at the end to allow a net of cat-gut or deer skin to be stretched across. The ball used by the Indians was made of hide, stuffed with hair, bark or the knot of a tree, but all the balls are now made of India rubber, 2½ inches in diameter. Many interesting anecdotes of this game are related by the early settlers and explorers. As many as 1,000 Indians sometimes played on a side. The players were put through a long course of training and the game was preceded by elaborate

ceremonial dances. History records that on one occasion a band of Indians led by Pontiac invited the garrison of Fort Michilimackinac (now Mackinac) to witness a game of "baggataway," as they called it, and pro-

another player whose duty it is to outmaneuver his opponent. The two centers begin the game by "facing off;" that is, after the ball is placed in the center of the field, the two players place the backs of their crosses on either side of the ball and at the word "play" each tries to draw the ball toward him. The ball is scooped up from the ground and carried horizontally on the crosse, while the player runs towards his opponent's goal. The other team tries to stop his progress by securing possession of the ball. If the center now sees a good opportunity he tosses the ball to one of his team-mates, who then runs with it or tosses it on. When one side has scored a goal the centers again face off and the game goes on. In the necessity for quickness of eye and limb, not to mention brain, in the general effect on the players and in the fascination for both players and spectators, are found the reasons for the great popularity of lacrosse.

LA CROSSE, Wis., the county seat of La Crosse County, 200 miles northwest of Milwaukee, on the Mississippi River and on the Chicago, Burlington & Quincy, the Chicago & North Western, and the Chicago, Milwaukee, St. Paul & Pacific railroads. There is an airport. The city is an important farming and dairying center for a large section. The principal manufactures are agricultural implements, rubber shoes, crackers, gas engines, plows, tractors, candy, knit goods and flour. The city has the Washburn Public Library, four hospitals, a Federal building and a state normal school. There is a weather station and a government fisheries bureau. The place was settled in 1841 and was incorporated in 1856. Population, 1930, 39,614.

LACTEALS, *lak'te alz*, tiny vessels of the small intestine, which convey chyle to the blood during digestion. The lacteals have their origin in small projections, called *villi*, which are found in the mucous membrane of the small intestine. Each villus has its own lacteal vessel or network of vessels. The lacteals discharge their contents in to the *receptaculum chyli*, from which the contents pass to the thoracic duct. The lacteals absorb the fatty particles of the chyle, which, after they have entered these vessels, change their character. In the intestines, these particles exist in the form of minute drops, while in the lacteals they are found to be as fine as dust and to have changed from the kind of fat that was eaten—tallow, butter or lard



THE GAME OF LACROSSE

ceeded to massacre all the whites. In time the game was adopted by the white settlers, but it is only since 1867 that it may be called the national game. In that year a set of practical rules were adopted, clubs were organized and a great impetus given to the game in every part of Canada.

How It Is Played. The object of the game is to drive the ball as many times as possible through the opponent's goal, at the same time defending one's own goal from a similar attack. There are twelve men on each side.



CROSSE AND BALL

Each player, except the goal-keeper (generally known simply as "goal"), is opposed by

—to the fat of the animal in whose lacteals they are found. See THORACIC DUCT.

LACTIC, *lak'tik*, **ACID**, the name applied to several acids composed of carbon, hydrogen and oxygen. Ordinary lactic acid is found in sour milk and in animal blood and muscle. It is produced by the action of a bacillus on sugar-cane juice. It is sour, odorless and of a syrupy consistency.

LADING, **BILL OF**. See **BILL OF LADING**.

LADOGA, *lah'doh gah*, the largest lake in Europe, in the northwestern part of Russia, 7,000 square miles in extent. About seventy rivers, the Volkhov being the largest, enter it, pouring into it the waters of several lakes at higher levels. It is drained by the Neva. In 1935 a system of canals between Leningrad and the White Sea was inaugurated, utilizing the waters of the Neva river, Lake Ladoga, and small lakes and rivers northward to the White Sea.

LADRONE' ISLANDS, or **MARIAN'A ISLANDS**, a group of sixteen islands in the Pacific Ocean, about 1,500 miles east of the Philippines. Eight of the islands are inhabited, chiefly by Tagologs. Guam is the southernmost and largest; next in importance are Saipan, Tinian and Rota. The islands are mostly of volcanic origin and are very rugged and picturesque. They are densely-wooded and perennially green. The soil is fertile, and rice, coffee, tobacco, maize and indigo are cultivated. Coconut and breadfruit trees are native. There are few insects and reptiles and no native mammals except bats and rats. The islands were discovered by Magellan in 1521. Guam, with a population (1930) of 18,500, was ceded to the United States by Spain in 1898. The rest of the group, with a population of 69,500 (50,000 native), sold by Spain to Germany in 1899, were taken by the Allies in the World War, and subsequently were placed under mandate to Japan by the Treaty of Versailles.

LADYBIRD, a pretty little beetle, ornamented with bright red, yellow or black spots. The bug is almost hemispherical in form, the under side being flat. It feeds on scale insects and plant lice and thereby renders a great service to fruit growers. Some ladybirds eat the leaves of vegetables.

LADYSMITH, **SOUTH AFRICA**, in the northern part of Natal, capital and third largest town of Ladysmith district. It is situated on the Klip River, 322 miles southeast of Pretoria, at the junction of two railroads.

The place was founded in 1851 and named for the wife of Sir Henry Smith, at that time governor of Cape Colony. During the Boer War it was the scene of a memorable siege lasting for 118 days. In February, 1900, the British forces, commanded by Sir George White, were relieved by General Buller. Population, 1931, 7,000.

LADY'S SLIPPER, or **MOCCASIN**, *mok'a sin*, **FLOWER**, one of a genus of beautiful orchids, widely distributed throughout temperate regions of the northern hemisphere. About ten species are found in America, including the "showy lady's slipper" and the "pink lady's slipper." A species often seen in florists' windows is light yellow, marked with brown. The plants easily cultivated. See ORCHIDS.

LA FARGE, *la fahrz*, **JOHN** (1835-1910), an American figure and landscape painter, born in New York City. His father, a retired French army officer, gave him a liberal education, and in 1856 the son went to Paris to study art. On returning to America he married Miss Margaret Perry, great-granddaughter of Benjamin Franklin, in 1876 was elected president of the Society of Mural Painters, and about the same time turned his attention to stained glass, a field in which he gained distinction. His windows, which are remarkable for beauty of design and purity of color, are a decorative feature of numerous churches and fine private houses. They may be seen in Trinity Church, Buffalo; Memorial Hall of Harvard University; Judson Memorial Church, New York City; the Crane Memorial Library, Quincy, Mass., and the second Presbyterian Church, Chicago. Since the artist's death the increased value of his stained glass is attested by the fact that it is sought by museums.

La Farge was a versatile genius, depicting a wide variety of subjects and exhibiting a diversified style. Of his paintings those exceptionally worthy of mention are *The Arrival of the Magi*, in the Church of the Incar-



LADY'S SLIPPER



LADYBIRD

nation, a large altar piece in the Church of the Ascension, both in New York City, and the mural decorations in the Minnesota State Capitol, Saint Paul. La Farge wrote two volumes of art criticism, *Considerations on Painting and Great Masters*.

LAFAYETTE, *lah fa yet'*, IND., the county seat of Tippecanoe County, sixty-four miles northwest of Indianapolis, on the Wabash River and on the Cleveland, Cincinnati, Chicago & Saint Louis, the Wabash, the Lake Erie & Western and the Chicago, Indianapolis & Louisville railroads. The city has a beautiful location on the bluffs and terraces of the river, and is surrounded by an agricultural region. The manufactures include gas pumps, fertilizer, safes, locks, meters and transformers, cardboard, wire works, agricultural implements and other articles. The city is the seat of Purdue University (which see), a public library, Wabash Valley Sanitarium, a soldiers' home for veterans and their wives, Saint Elizabeth's Hospital and Saint Joseph's orphan asylum. The city was built near the site of a French fort, Post Oniatanon, which was constructed about 1720. Lafayette was settled in 1820 and was incorporated in 1854. Population, 1920, 22,456; in 1930, 26,240.



LAFAYETTE, MARIE JEAN PAUL YVES ROCH GILBERT DU MOTIER, Marquis de (1757-1834), a French general and statesman, whose memory is revered by Americans because of the aid he rendered the colonies at the time of the Revolution. He began his career at the court of Louis XV, at the period when hostilities were commencing between Britain and the colonies. In 1777 he left France for America, having fitted out a vessel for himself, and was received most cordially by Washington and his army. He was made a member of Washington's staff, with the rank of major-general, was wounded at Brandywine and commanded the vanguard of the American army at the capture of Cornwallis.

Lafayette returned to France on the close of the campaign, was called to the Assembly of the Notables, and in 1789 was elected a member of the States-General, which he was

partly instrumental in converting into the National Assembly. In the Assembly he proposed a declaration of rights and the decree providing for the responsibility of the officers of the Crown. Two days after the attack on the Bastille, he was appointed commander in chief of the National Guards of Paris. It was through his means that the king and queen were saved from the mob that had taken possession of the palace at Versailles. His popularity, however, was not great with any party in the state; he was too moderate for the radicals and too liberal for the court party.

After the adoption of the constitution of 1790, Lafayette resigned all command and retired to his estate of La Grange. In 1792, when France needed peace, war began with Austria and Prussia, and he was appointed one of the three major-generals in command of the French armies. While directing some operations on the frontier of Flanders, Lafayette nearly fell into the hands of his enemies, the Jacobins, the extremists among the Revolutionists (see FRENCH REVOLUTION). They were then coming into power as the ruling element in Paris, and were determined to remove from his command this exponent of moderation and tolerance. Commissioners were sent by the Jacobins to arrest him, and though he evaded them, he was captured by an Austrian patrol while he was seeking refuge in neutral territory. The Austrians kept him a prisoner at Olmütz until 1797, when Napoleon procured his release; and on his return to France he took little part in public affairs, on account of his opposition to the Consulate and the Empire. In 1818 he was chosen a member of the Chamber of Deputies and was a constant advocate of liberal measures.

Lafayette visited the United States in 1824 and was received with great enthusiasm. Congress voted him \$200,000 and a township of land. During the revolution of July, 1830, he was appointed general of the National Guards of Paris, and it was chiefly through him that Louis Philippe obtained the crown. A monument to Lafayette was erected in New York in 1876. His son, George Washington Lafayette, was prominent in French politics during the early nineteenth century.

Lafayette's services to America were fittingly honored during the World War, when the American nation gave generous aid to France, and helped save the country from

defeat. Even before the United States entered the war many young American aviators enlisted in the famous Lafayette Escadrille, a flying corps, offering their lives for France.

LAFAYETTE NATIONAL PARK, now known as Acadia National Park, on Mount Desert Island. See **PARKS, NATIONAL**.

LA FOLLETTE, *la fol'et*, PHILIP Fox (1897—), second son of Senator La Follette (see below), and a leader in the modern Progressive movement. He was born in Madison, Wis., and educated at the state university, from which he was graduated in 1919. After practicing law he entered politics, and was elected governor of Wisconsin by the Republicans for the term 1931–1933. Defeated for renomination, he joined his brother, Robert Jr., in the organization of a state Progressive party, which carried the state election in 1934. Philip La Follette served as governor for the term 1935–1937 and was reelected in 1936 for the term 1937–1939.

LA FOLLETTE, ROBERT MARION (1855–1925), an American political leader who won a national reputation as an advocate of progressive legislation, both in behalf of his native state of Wisconsin and for the nation at large. He was born at Primrose, and during his boyhood and youth worked hard to secure an education. In 1879 he was graduated from the University of Wisconsin, in 1880 was admitted to the bar, and after a notable career as district attorney of Dane County, entered the national House of Representatives (1885). In 1890 he was defeated for reelection, and for the next ten years engaged in law practice in Madison, meanwhile coming into public notice as an opponent of machine politics. In 1900, after a stirring campaign, he was elected governor of Wisconsin on the Republican ticket, by the reform element.

La Follette made a notable record as governor, for during his four years of office Wisconsin adopted direct primaries, equalization of taxation, control of railroad fares and other progressive measures. In 1905, after a second reelection, he resigned to enter the United States Senate, to which he was reelected in 1910, 1916 and 1922. In Congress he was one of the leaders of the insurgent Republicans, and in 1912 and 1916 was an unsuccessful candidate for the Presidential nomination on the Republican ticket.

In 1924 he was nominated for the Pres-

idency as an Independent-Progressive candidate. He carried only one state, Wisconsin, but polled more than four and a half million votes in the nation.

LA FOLLETTE, ROBERT MARION, JR. (1895—), oldest son of Senator La Follette, born in Madison, Wis., studied at the University of Wisconsin, and early turned his attention to politics as secretary to his father. On the death of the elder La Follette, in 1925, the son was elected to fill the unexpired term of his father as United States Senator, and in 1928 was elected for the full term ending in 1935. He had sought these elections as a Republican, but the division between the conservative and liberal factions in Wisconsin was so complete, he and his brother Philip organized a state Progressive party in 1934. In the election of that year, Robert La Follette was reelected to the Senate and his brother to the governorship.

LAFONTAINE, *lah fon tane'*, JEAN DE (1621–1695), a French poet, noted chiefly for his fables. His early verses won him influential friends, who induced him to go to Paris and provided for him while there. He enjoyed the friendship of Molière, Boileau, Racine, and all the first wits of Paris, by whom he was much beloved for the candor and simplicity of his character. But he was no favorite with Louis XIV, who even hesitated some time before confirming his nomination to the French Academy.

Lafontaine's first volume of *Tales* appeared in 1664, a second in 1671. The *Fables*, of which innumerable editions have appeared since the first volumes in 1668, make a universal appeal by reason of their homely truths, unobtruded moral lessons, lively and natural descriptions and shrewd analysis of character.

LAFONTAINE, LOUIS HYPOLITE, Sir (1807–1864), a Canadian statesman, born in Chambly, Quebec, and educated at Montreal. He was elected to the legislative assembly for Lower Canada in 1830, and later succeeded Papineau as leader of the French party. Elected to the joint assembly after the Act of Union, in 1842 he joined with Robert Baldwin in forming a Ministry. A second Lafontaine-Baldwin Ministry, organized after the election of 1848, was the first government openly acknowledged to be responsible to a majority of the people. From 1853 until his death, he was chief justice for Lower Canada.

LAGERLOF, *lah'ger luf*, SELMA (1858-), a Swedish novelist, one of the greatest woman writers of all time. She was born on her father's estate in Wermland, Sweden, and was educated in Stockholm at the Royal Women's Superior Training College. After her graduation she taught school for ten years. Her first novel, *The Story of Gösta Berling*, appeared in 1891, while she was still teaching. It at once placed her in the front rank of Scandinavian authors. The popularity of this book was even exceeded by that of *The Miracles of Antichrist*, a brilliant portrayal of country life, published in 1897. *The Adventures of Nils*, based on the fairy tales of the Swedish people, was written at the request of the Association of Common School Teachers, and is used as a supplementary reader in Swedish schools. Among her other books are *From a Swedish Homestead*; *Jerusalem*; *Legends of Christ*; *Invisible Links*; *The Girl from the Marsh Croft*; *Demons and Men*; *Marbacka*; *The Ring of Löwenskölds*; *Charlotte Lofvenskvild*. She was awarded the Nobel Prize in Literature in 1909 because of the superiority of the novel *The Story of Gösta Berling*. In 1914 she was elected to the Swedish Academy.

LAGOON', a shallow sheet of water near the sea, usually separated from it by narrow areas of sand; or, an expanse of deep water separated from the sea by an atoll, or coral reef. Famous lagoons of the first type are those near the head of the Adriatic Sea, on the edge of which Venice (often called "the City of Lagoons") is situated. Many large cities situated near great bodies of water have parks containing artificial lagoons. See **ATOLL**.

LA GUARDIA, FIORELLA HENRY (1882-), an Italian-American soldier and politician, a native of New York City. Successively he was in the consular service, interpreter for three years at Ellis Island immigrant station, then from 1915 to 1917 deputy attorney general of his state. Elected a member of Congress for 1917 to 1919, he absented himself to enter the war, and became a major. After the war he was president of the New York board of aldermen, then was again elected to Congress, where he served ten years (1923-1933). In 1934 he was elected fusion mayor of New York City.

LAHORE, *lah hohr'*, INDIA, the capital and largest city of the Punjab, a province in British India (see **PUNJAB**). It is also the

administrative headquarters of Lahore division and district, and is a railroad center of considerable importance. The native city is not impressive, as the streets are unpaved and narrow, and the houses are irregularly built. It possesses, however, a magnificent mosque and an old palace of the early Mogul kings. This section is surrounded by a brick wall fifteen feet high; the European quarter has grown up on the outside. Lahore contains the chief educational institutions of the Punjab, including a university. The principal manufactures include coarse textiles, vegetable oils and carpets. Population, 1931, 429,747.

LAISSEZ FAIRE, *lay say fair'*, a French expression which means *non-interference*. In economics the term is applied to the theory that a public authority should interfere in the concerns of a community as little as possible; that wealth tends to be produced more peaceably and economically where a government leaves individuals free to produce and distribute on mutually arranged terms. This rule in practice has various exceptions, as in matters of education, child labor and public health and morality. Advocates of the theory generally agree that the state should perform those functions that cannot be adequately performed by an individual or association of individuals.

LAKE, a large body of water wholly surrounded by land, having no direct or immediate communication with the ocean or with any seas, or having such only by means of rivers. Lakes are divided into four classes:

- (1) Those having no outlet and receiving no running water, usually very small.
- (2) Those having an outlet, but which have no running waters on the surface and are consequently fed by springs.
- (3) Those which receive and discharge their water by streams, by far the largest class.
- (4) Those which receive streams but have no visible outlet, being generally salt, such as Great Salt Lake, the Caspian Sea, the Dead Sea and the Aral Sea.

Large lakes have a moderating effect on the climate of regions about them. They make the winters less severe and the summers cooler. It is due to the moderating effect of the Great Lakes that there is a fruit belt along the east shore of Lake Michigan and a tobacco belt in New York along lakes Erie and Ontario.

LAKE AGASSIZ, *ag'a se*, an extinct lake that existed during the latter part of the

Glacial Period (which see), in the valley of the Red River of the North. The bed of this great body of water, which had an area exceeding that of the Great Lakes combined, is one of the most fertile wheat regions in the world. Its existence is proved by traces of deltas and shore lines. Geologists believe that the vast lake discharged at its southern end into the Minnesota River, through a channel fifty miles in length.

LAKE CHARLES, La., the parish-seat of Calcasieu Parish, 216 miles west of New Orleans, on the Southern Pacific, the Kansas City Southern, and the Missouri Pacific railroads. The city has a beautiful location on the Calcasieu River and an interoceanic canal and on the Shore of Lake Charles; it is one of the most attractive of cities. There are great rice fields and forests of long-leaved pine, and extensive rice and lumber mills, cotton compressing and ginning, and other industries. It is the seat of two Catholic institutions, St. Patrick Sanitarium, and a Federal building. The place was settled in 1849 and was incorporated in 1860. Population, 1920, 13,088; in 1930, 15,791, a gain of 20 per cent.

LAKE DWELLINGS, primitive dwellings built on piles or other foundations in lakes or creeks near shore. The name is usually applied to such prehistoric dwellings as those of the Swiss lakes, the first relics of which were discovered in 1853. Two plans of construction were employed by the builders. In one, numerous piles were driven into the water bed, and on these the house was built; in the other a foundation was made of stones, brush and mud, held together by supporting piles. The latter type, called the *crannog*, was common in Scotland and Ireland. Boats or narrow pile bridges provided means of communication with the shore. Discoveries have been made which show that some of the villages built on piles in the water were constructed during the Stone Age, that others were built after the Iron Age began, and that a period of possibly 4,000 years must have elapsed between the building of the first and the last of those now known. Among the remains various grains and fruit seeds and pieces of pottery have been found; bones indicate the lake dwellers' ownership of herds of cattle and of goats.

There are to-day peoples living the same sort of existence in parts of South America, Central Africa, the Malay Peninsula and in

some of the islands of the Asiatic Archipelago.

LAKE OF THE WOODS, a lake which constitutes part of the boundary between Minnesota and the extreme western end of Ontario. It has an area of 1,500 square miles and receives the drainage of an area 36,000 square miles in extent. Although the lake is only about seventy miles long, its irregularity gives it a shore line of 300 miles. It lies in a region of dense forests and is thickly studded with wooded islands. The lake discharges into Lake Winnipeg through Winnipeg River.

LAKE SCHOOL, or **LAKE POETS**, a name given by the *Edinburgh Review* to Wordsworth, Coleridge and Southey, because they lived in the Westmoreland and Cumberland lake district. They were representative poets of the new Romantic Period, of the early nineteenth century, and though they differed in many respects, they agreed in their disapproval of the formal and unimaginative verse of the preceding century.

LAMAISM, *lah'mah iz'm*, a corrupt form of Buddhism which has prevailed in Thibet and Mongolia since the middle of the eighth century. Lamaism embraces the doctrine of Church and State unity. The highest dignitaries are two Lama popes, one called *Dalai-Lama* (Grand Lama) the other *Tashi-Lama*. The former, the more powerful, lives at Potala, near the sacred city Lhasa. He is recognized the supreme head of the Church, the superior of all in temporal power, not only in Mongolia and Thibet, but also in parts of Western China, Siberia, Mongolia and Manchuria. The chief sacraments of the religion are baptism and confirmation; the fundamental doctrine is reincarnation or transmigration of souls. See **BUDDHISM**.

LAMAR, *la mah'r*, **LUCIUS QUINTUS CINNATUS** (1825-1893), an American lawyer, politician and jurist, born in Putman County, Georgia. He was graduated from Emory College, then studied law, was admitted to the bar in 1847, and was successively professor of mathematics in the University of Mississippi, member of the Georgia legislature and member of Congress from Mississippi. In 1861 he resigned and joined the Confederate army as lieutenant-colonel, but later spent two years in Europe as unofficial representative of the Confederacy. He was professor of law in the University of Mississippi from 1867 to 1872, was again a mem-

ber of Congress from 1872 to 1877, and a member of the Senate from 1877 to 1885. He was Secretary of the Interior in President Cleveland's Cabinet, and was later appointed Associate Justice of the Supreme Court of the United States. During his political career his single purpose was to effect complete reconciliation between North and South, and he did much to accomplish this end.



LAMARCK, *la* L. Q. C. LAMAR

mahrk', JEAN BAPTISTE PIERRE ANTOINE DE MONET (1744-1829), a French naturalist. He was educated for the Church but entered the army and served in the Seven Years' War. Disabled by an accident, he went to Paris and devoted himself to the study of medicine and physical science. His chief works are *Philosophie Zoologique*, a work in which he introduced great reform in the classification of animals and set forth a theory foreshadowing what is now known as the doctrine of evolution; *Histoire Naturelle des Animaux Vertébrés* (Natural History of Vertebrate Animals), and *Encyclopedia of Botany*.

LAMB, CHARLES (1775-1834), an English writer whose fame rests chiefly on his charming and fanciful essays. He was educated at Christ's Hospital, where he formed his lifelong friendship with Coleridge. After leaving school, the greater part of his life was devoted to the safe-keeping and care of his sister Mary, who in a fit of acute mania had stabbed her mother fatally. Charles refused to allow her to be confined permanently in an asylum, and except during attacks of her mania, she was in his home. To care for her he was obliged to renounce the idea of marriage with a girl he loved, and his life was one long sacrifice.



CHARLES LAMB

Lamb's first appearance as an author was in 1798, when he published a number of poems, in conjunction with his friends, Coleridge and Lloyd. These attracted little attention, nor was he more successful with his two attempts at the drama, *John Woodvil*, written in imitation of the early English dramatists, and a farce entitled *Mr. H*. His *Tale of Rosamund Gray*, although it was well received, did not bring him fame; but with the publication of his *Tales from Shakespeare*, written in conjunction with his sister Mary, he came at once into popular favor. *The Adventures of Ulysses* followed, and in *Specimens of English Dramatic Poets Contemporary with Shakespeare*, he brought to public notice the almost unknown lesser dramatists of the sixteenth century. He owes his chief literary distinction, however, to his delightful *Essays of Elia*, contributed chiefly to the *London Magazine*. Here, in a style ever happy and original, he has carried the short humorous essay to a point of excellence perhaps never before attained.

LAMENTATIONS, a book in the Old Testament in the Authorized Version of the Scriptures, occupying a place between the books of *Jeremiah* and *Ezekiel*. *Lamentations* is a poem in five chapters, which, with the exception of the fifth, are arranged in verses corresponding to the letters in the Hebrew alphabet. In chapters one, two and four the verses are arranged alphabetically. In chapter three the first three verses begin with the first letter of the alphabet, the second three with the second, and so on. This chapter has sixty-six verses, while the first, second and fourth have twenty-two verses each, the number of verses corresponding in this case to the number of letters in the alphabet. The fifth chapter is not alphabetically arranged and is supposed by some critics to have been written by another author, though the entire book is generally ascribed to the prophet Jeremiah. *Lamentations* treats of the destruction of Jerusalem and the suffering of its defenders.

LAMMERGEIER, *lam'mur gi ur*, the largest bird of prey in Europe, sometimes called the *bearded vulture*, and intermediate between the eagles and the vultures. It is found in the Swiss and German Alps, as well as in the higher mountains of Asia and Africa, is about four feet in length and has a wing expansion of from nine to ten feet. It preys on small quadrupeds, on chamois,

lambs and hares, and also eats dead and decaying meat.

LAMPBLACK, a fine soot, formed by the condensation of the smoke from imperfect combustion of burning oil, pitch or resinous substances, as in a chimney. It is used in the manufacture of pigments, blacking and printing inks. See CARBON.

LAMPREY, the popular name of several species of eel-like, scaleless fishes, which inhabit both fresh and salt water. The breathing organs are seven gill-openings on each side near the head. The mouth is in the form of a sucker, lined with strong teeth and cutting plates. The *marine*, or *sea*, *lamprey* sometimes reaches a length of three feet and a weight of five pounds. It is of a dusky brown, with yellowish patches, is common around the British coasts and is also found in the Mediterranean. It ascends rivers in the spring for the purpose of spawning and was formerly much valued as an article of food. The *river lamprey*, or *lamp-pern*, is a smaller species that abounds in the fresh-water lakes and rivers of northern countries. It is often seen clinging to stones with its mouth. It is black on its upper parts and of a silvery hue on its under surface. Lampreys attach themselves to other fishes, such as the shark, sturgeon or salmon, and suck their blood; they also eat soft animal matter of any kind. See HAGFISH.

LANCASTER, HOUSE OF, the name used in English history to designate the line of kings immediately descended from John of Gaunt, fourth son of Edward III. Henry III, son of King John, created the title Earl of Lancaster for his son Edmund in 1267, but the name did not designate a royal line until after the marriage of John of Gaunt and Blanche of Lancaster. John was created Duke of Lancaster in 1362. His son, Henry IV, received the crown on the enforced abdication of Richard II (1399), becoming then the first king of the House of Lancaster, whose emblem was the red rose. The line was continued by Henry V and Henry VI, but the latter was a weak king who was deposed in 1461 during the Wars of the Roses between the Houses of Lancaster and York, a white rose being the emblem of the House of York. Henry was reinstated in 1460. On his death, in 1461, the royal line of Lancaster came to an end. Under Henry VII the Houses of York and Lancaster were united and the royal Tudor line was established.

The period of the Wars of the Roses is vividly pictured by Shakespeare in his *Henry VI*.

Related Articles. Consult the following titles for additional information:

England (History)	Henry VI
Henry IV	Roses, Wars of the
Henry V	York, House of

LANCASTER, OHIO, the county seat of Fairfield County, thirty miles southeast of Columbus, on the Hocking River and the Hocking Canal and on the Pennsylvania and Chesapeake & Ohio railroads. The shipping facilities are good, and the city is the seat of railroad shops and manufactories of agricultural implements, foundry products, paper, shoes, mirrors, carbons, tires, lenses and glass. The state industrial school for boys is located here, and there is a Federal building, a library, a hospital and an armory. Nine city parks and playgrounds cover a hundred acres. Government is by mayor and council. The place was settled in 1800. Population, 1920, 14,706; in 1930, 18,716.

LANCASTER, PA., the county seat of Lancaster County, sixty-eight miles west of Philadelphia, on the Conestoga River and on the Philadelphia & Reading and the Pennsylvania railroads. The city is the seat of extensive manufactories of cotton, silk, cigars, paper, steel tanks, asbestos products, refrigerators, fertilizers, envelopes, umbrellas, watches, carriages, corks, iron goods, and linoleum. Franklin and Marshall College, Shippen School for girls, Thaddeus Stevens Trade School, and Reformed Theological Seminary are located here, and one of the state normal schools is near the city. The public institutions include hospitals, the Children's and Stevens's homes, a Federal building and several libraries. Other features of interest are several parks and a soldier's monument. The place was settled about 1718 and was called Hickory Town until 1729. From 1799 to 1812 it was the capital of the state. It was chartered as a city in 1818. Population, 1930, 59,949.

LANCE, *lans*, a weapon consisting of a long shaft with a sharp point. It was common among the Greeks and Romans. The Macedonian phalanx was armed with it, and it was the chief weapon of the Roman infantry. The lance was the chief weapon in the Middle Ages and was especially the weapon of knighthood. The introduction of firearms gradually led to the disuse of the lance in the west of Europe, though it con-

tinued in the east. Napoleon organized several regiments of Polish lancers for service in his army.

LANCEWOOD, *lans'wood*, the popular name of the wood of several tropical trees which possesses in a high degree the qualities of toughness and elasticity and is on this account extremely well adapted for the shafts of light carriages, fishing rods and all those uses where light, strong, but elastic timber is required.

LAND AND SEA BREEZES, the name of daily winds, which blow alternately on and off shore. During the day the land becomes heated to a higher temperature than the sea, and a little before noon a breeze begins to blow landward. This increases in strength until about the middle of the afternoon, when it gradually subsides. During the night the land radiates heat rapidly and becomes cooler than the sea, so that after midnight in most localities a breeze sets in, blowing off shore and continuing until about sunrise. Land and sea breezes are regular occurrences in the tropical regions that are free from local storms, and they are gentle winds. In the temperate latitudes they are not as regular, since they are liable to be disturbed by local conditions. Similar breezes occur along the shores of the Great Lakes and other large bodies of fresh water, though they are not as distinctly marked.

LAND CRAB, a crab which takes its name from the fact that when full-grown it lives upon the land. All live in warm countries. The land crabs resemble the common crabs very closely. They breathe by gills, though some inhabit dry places and burrow in the earth. They make periodical migrations to nearby bodies of water, supposedly for the purpose of depositing their eggs. Among the most common are the *black crabs*, or *mountain crabs*, of the West Indies, which live in the woods and hills often two or three miles from shore, regularly visiting the sea in April and May. Nearly all land crabs are active during the night and, except in rainy weather, remain concealed during the day. Some are good to eat; the eggs also are considered a delicacy. See **CRAB**.

LANDIS, **KENESAW MOUNTAIN** (1866-), a United States District judge of the Illinois Federal district, appointed in 1905 by President Roosevelt. He has achieved a nationwide reputation for fearlessness and independence, and has maintained the highest

traditions of the Federal bench. In 1907 he fined the Standard Oil Company \$29,200,000 for rebating, and in 1918 sent nearly 100 leaders of the Industrial Workers of the World (the I. W. W.) to a Federal prison for conspiracy to obstruct the war work of the government. Since 1920 he has been national commissioner of organized baseball, under contract with the major leagues.

Landis was born in Millville, Ohio, and was graduated from the Union College of Law, Chicago. In that city he has since resided, except for a brief period when he served Secretary of State Walter Q. Gresham as private secretary.

LANDLORD AND TENANT. See **TENANT**; **LEASE**.

LONDON, **ALFRED** [**ALF.**] **MOSSMAN** (1887-), an industrialist, statesman, and Republican nominee (1936) for the office of President of the United States. He was born on September 9, 1887, at West Middlesex, Pa. There is evidence of Dutch ancestry, indicated by his middle name of Mossman, which was his mother's maiden name. In his early youth the family lived in Marietta, O., where Alfred attended Marietta Academy (now Marietta College). In 1904 the Londons moved to Independence, Kan.; there the father, John M. London, became interested in a small way in oil-field development, and that city became their permanent home.

The son entered the University of Kansas at Lawrence, from which he was graduated in law in 1908. More than a quarter of a century later, when he had shown rare administrative ability, he was honored with the degree of Doctor of Laws (LL.D.) by Washburn College (1933), and by Marietta College (1934). After his graduation from the university, he chose a banking career in Independence rather than that of the law, but within four years (1912), he determined to enter the oil field as a small independent operator. Here he achieved a reputation for honesty, integrity, and capacity for hard work.

In 1928 London was chosen to be chairman of the Kansas Republican state central committee, in which post he became known throughout the state. In 1932 his party elected him to the governorship, though the state gave its electoral vote to the Democratic nominee for President, Franklin D. Roosevelt. In 1934 London was nominated for a second term as governor, and had the

distinction of being the only Republican governor reelected that year in any state; in only seven states were Republican governors chosen.

In his two terms as governor, Landon's record for economic administration in a critical period attracted attention throughout the nation, and support in such volume was given him that in the Republican national convention in 1936 at Cleveland he was nominated unanimously on the first ballot for President of the United States.

In 1915 Landon married Miss Margaret Fleming of Oil City, Pa., and from this union his eldest daughter, Margaret Ann, named for her mother and grandmother, was born; she is the "Peggy Ann" of the present day. While on a vacation in Colorado in 1918 Mrs. Landon died. Later in that year he enlisted in the army as first lieutenant in the chemical warfare department, but the war ended in November, and a month later he was mustered out, without seeing active service.

In 1930 he married Miss Theo Cobb of Topeka; a daughter, Nancy Jo, was born in 1932, and a son, John Cobb, in 1933.

LANDOR, WALTER SAVAGE (1775-1864), an English poet and prose writer. He was educated at Rugby and Oxford, from both of which he was expelled for unruliness. In 1795 he issued a small volume of poems, and in 1798 he published a long poem, *Gebir*, which he afterwards translated into Latin. His fame rests chiefly on his *Imaginary Conversations* between celebrated persons of ancient and modern times, which is a model of a pure, vigorous, finished English style.

LANDS, PUBLIC, a part of the national domain which is owned exclusively by the government and is subject to sale or other disposal. They consist wholly of land secured from other nations by treaty, from the states by cession and from Indian tribes by treaty, cession and conquest.

How They Originated. At the organization of the national government there were no public lands, except those under the jurisdiction of the several states or claimed by them. This, however, included a large territory northwest of the Ohio River, known as the Northwest Territory. Before the adoption of the Articles of Confederation (which see) the several states ceded to the national government all their claims to this territory, and at that time the first public

domain was created. Soon afterward North Carolina, Georgia, South Carolina and Virginia ceded their claims to other lands south of the Ohio River and west of the Alleghanies. In 1803 the United States gained by the Louisiana Purchase (including Oregon) more than 1,000,000 square miles. In 1819, by the acquisition of Florida, it secured some 60,000 square miles. By the annexation of Texas in 1845, the public domain received an addition of 262,000 square miles. At the close of the Mexican War in 1848 the present territory of New Mexico and California was added, with a total area of 523,800 square miles. In 1853, the Gadsden Purchase, 36,200 square miles was added, and in 1867, with the purchase of Alaska, another increase of 577,000 square miles was secured. The part of this vast territory which has been reserved by the general government at the time of the organization of states and territories is known popularly as the *public lands*.

How Disposed Of. Six methods of disposing of these lands have been followed, of which the most important in the early years of the government was that of gift and special grant. These were of several kinds: those made to individuals by reason of special service; those made to the states for the purpose of encouraging education or building public roads or railroads; those made to the railroads and other corporations as an inducement to develop the resources of the country. The government also disposed of its lands by sale, at first in large quantities for a nominal sum, and later in smaller quantities for reasonable compensation. It has also sold them at public auction, the minimum price accepted being \$1.25 per acre. It has granted them by preëmption (which see). According to this scheme persons who desire to secure lands for farming or some other direct use, may settle upon the land, live there for six months and at the end of that time, by paying \$1.25 per acre, receive the clear title to the property. This law has been repealed. The Homestead Laws provide a somewhat different course of procedure. They require a period of residence upon the land, when the title will pass to the occupant upon the payment of a nominal fee, rarely more than \$30. The maximum amount granted to any one settler or head of a family is 160 acres. The law provides for larger homesteads of 320 acres (in thirteen states) on non-mineral and non-timbered land. In

some states of the West, 640 acres may be taken up by one person for grazing or for forage growing.

Survey of Land. The management of the public lands rests with a bureau of the department of the interior, known as the General Land Office, presided over by a Commissioner appointed by the President. He has charge of the survey and disposal of the land and carries on the work through land offices scattered throughout the states.

ranges are six miles wide and are divided into townships six miles square, which are numbered north and south from a fixed parallel. The townships are subdivided into sections, each one mile square and numbered according to a uniform system. Each section is divided into quarter-sections, which are designated by their direction from the center, as northwest, southwest, northeast and southeast. It is therefore possible to designate any plot of land as small as five

Six N miles					
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
1 mile S					

N. $\frac{1}{2}$ 320 A.		
N.W. $\frac{1}{4}$ of S.W. $\frac{1}{4}$	NE. $\frac{1}{4}$ of SW. $\frac{1}{4}$	S.E. $\frac{1}{4}$ 160 A.
SW. $\frac{1}{4}$ of SW. $\frac{1}{4}$		

TOWNSHIP IN SECTIONS

It may be assumed that the section at the right represents Section 22 of the township. The land in the small white square above the square in black is thus described: "The n. e. $\frac{1}{4}$ of the s. e. of the s. w. $\frac{1}{4}$ of Section 22." Describe the square in black. How many acres does it contain?

The survey of the public lands is made according to the so-called rectangular system, which was first adopted in surveying the lands in the Northwest Territory, about 1790. It provides for the division of lands into ranges, townships, sections and quarter-sections. The ranges extend in a north and south direction and are numbered east and west from a principal meridian. These

DIVISION OF A SECTION

acres with perfect accuracy (see drawing).

Extent of the Public Domain. In twenty-four states of the American Union there were in 1933 over 172,000,000 acres of land subject to entry under the laws and rules of the General Land Office. The acreage, unappropriated and unreserved, by states, is given in the following table. Much of it must be irrigated.

STATE	ACREAGE (1933)	STATE	ACREAGE (1933)
Arizona.....	13,203,600	North Dakota.....	146,301
California.....	16,576,463	Oregon.....	13,012,158
Colorado.....	7,545,773	South Dakota.....	516,680
Idaho.....	10,510,421	Utah.....	25,011,021
Montana.....	6,176,931	Washington.....	709,646
Nevada.....	51,270,277	Wyoming.....	14,327,024
New Mexico.....	13,078,285	Total.....	172,084,580

The unappropriated lands in Alaska are not included in this table. The total area of Alaska is 378,165,780 acres. Of this total, 346,182,675 acres are in public lands.

Originally almost a billion and a half acres were acquired by the nation as the "public domain." Homestead grants up to 1935 were made for nearly 277,000,000 acres; 182,000,000 acres were granted to the states for educational purposes, 39,000,000 to railroads within states, and 94,000,000 in railroad grants to corporations. Today there are 139,000,000 acres in national forests, 57,500,000 in Indian reservations. Deducting all other grants, there remains nearly 200,000,000 acres unappropriated for any purpose.

Land Offices. The United States Land Offices in the various states are located in the following places:

Alabama: Montgomery.
 Alaska: Anchorage, Fairbanks, Nome.
 Arizona: Phoenix.
 California: Los Angeles, Sacramento.
 Colorado: Denver, Pueblo.
 Idaho: Blackfoot, Coeur d'Alene.
 Montana: Billings, Great Falls.
 Nevada: Carson City.
 New Mexico: Las Cruces, Santa Fé.
 North Dakota: Bismarck.
 Oregon: Lakeview, Roseburg, The Dalles.
 South Dakota: Pierre.
 Utah: Salt Lake City.
 Washington: Spokane.
 Wyoming: Buffalo, Cheyenne, Evanston.

Within recent years many land offices have been discontinued, or consolidated with other offices in the same state. All business in connection with public lands in such sections is now transacted in the General Land Office, in Washington, D. C.

Homes for Soldiers. When the World War ended and 2,000,000 soldiers of the United States were to be returned from France the suggestion was made in many quarters that unusual facilities be afforded them for securing homes on the public lands. If the plan had been successfully carried out it would have removed the dread of unemployment for many thousands of young men and established them for life.

Public Lands in Canada. The public lands of Canada consist of granted and ungranted lands. The ungranted lands are in the older provinces and are the property of the provinces in which they lie. They are disposed of by the officials appointed by the respective legislatures of these provinces for this purpose. The ungranted lands in the Northwest Territories belong to the Dominion and are administered by the Dominion government

under direction of the department of the interior.

Survey. The Dominion lands are laid out in quadrilateral townships, each containing thirty-six sections of as nearly one square mile, or 640 acres, as the convergence of the meridians permits. The sections are numbered consecutively, beginning in the southeast corner of the township and following the order shown in the diagram:

N					
31	32	33	34	35	36
30	29	28	27	26	25
19	20	21	22	23	24
18	17	16	15	14	13
7	8	9	10	11	12
6	5	4	3	2	1
S					

W E

Each section is divided into quarter sections of 160 acres, and these quarter sections may be sub-divided into quarters. The numbering of the sub-divisions follows the same order as the numbering of the sections in the township, as shown by the diagram:

The townships are numbered in regular order northward from the international boundary lines on the 49th parallel of latitude, and lie in ranges numbered in Manitoba east and west from a prime meridian, which is named the principal meridian, and extends northerly from the 49th parallel. Throughout the northwest provinces the ranges are numbered westerly from other initial meridians, which are named 2nd, 3rd, 4th, and so on, according to their order, westward from the prime meridian.

Disposal of Dominion Lands. The Dominion lands of the northwest are divided in two classes, viz., even-numbered and odd-numbered sections. The sections numbered 8 and 28 were allotted to the Hudson's Bay Company; numbers 11 and 29 are reserved for school purposes and are known as school

13	14	15	16
12	11	10	9
5	6	7	8
4	3	2	1



A DISTINGUISHED MEMBER OF THE HUMANE SOCIETY—Landseer
London, England

sections. All other sections are held for sale and as land grants in aid of the construction of colonization railways. The latter provision has greatly aided the great transcontinental railroads.

Homesteads. Any person, male or female, who is the sole head of a family, or any male who has attained the age of eighteen years, who is a British subject, or any alien who declares his intention of becoming a British subject, is entitled, on making application before the local agent of the district in which the land he desires is located, and on paying an office fee of ten dollars, to obtain homestead entry for any quantity of land not exceeding 160 acres. In former years 320 acres could be acquired.

Anyone granted an entry for homestead is required to conform to the provisions of the Dominion Land Acts, under one of the following acts:

(1) At least six months' residence upon and cultivation of the land in each year during the term of three years.

(2) If the father (or mother, if father is deceased) of any person who is eligible to make a homestead entry under the provisions of this act, resides upon a farm in the vicinity of the land entered for such person as a homestead, the requirements of this act as to residence prior to obtaining patent may be satisfied by such person residing with father or mother.

(3) If a settler has obtained a patent for his homestead, or a certificate for the issue of such patent countersigned in the manner prescribed by the act, the requirements of this act as to residence prior to obtaining patent may be satisfied by residence upon the first homestead, if the second homestead is in the vicinity of the first homestead.

(4) If the settler has his permanent residence upon farming land owned by him in the vicinity of his homestead, the requirements of this act as to residence may be satisfied by residence upon said land.

(5) Should a number of homestead settlers, embracing at least twenty families, with a view to greater convenience in schools and churches, desire to locate in a village or hamlet near their homesteads, the minister of the interior may dispense with the condition of residence, but the condition of cultivation must be carried out.

The privilege of homestead entry applies to agricultural land only.

LANDSCAPE GARDENING, the art of laying out grounds, arranging trees, shrubbery and flowers, so as to bring into harmonious combination all the varied characteristics of a park or lawn. It disposes flowering plants, shrubs and trees over varying levels, in such a manner as to produce

the most pleasing effects; it shuts out undesirable views by means of judicious planting, and it introduces rock work, water and other artistic embellishments, where the local peculiarities of the ground permit. Landscape gardening has become a distinct art, and landscape gardeners of great skill are employed to lay out city parks and other public grounds. Frederick Law Olmsted may be considered the father of landscape gardening in America; several notable men have followed him. See **HORTICULTURE**.

LANDSEER, EDWIN, Sir (1802-1873), a celebrated English painter of animals, was born in London. He began to draw animals when a mere child, and at the age of twelve was able to paint and etch with much skill. In 1825 he went to Scotland to visit Sir Walter Scott, whom he painted with his dogs; after this he rapidly rose to fame. His pictures of animals are painted with sympathy, sentiment and feeling.

In 1831 Landseer became a member of the Royal Academy and later was knighted. Among his best known works are *Dignity and Impudence*, *Alexander and Diogenes*, *A Distinguished Member of the Humane Society*, *Connoisseurs*, *The Return from Deer Stalking*, *High Life and Low Life*, *Highland Drover Departing from the South*, *The Return from Hawking*, *The Shepherd's Chief Mourner*, *There's Life in the Old Dog Yet*, *The Stag at Bay* and *Dialogue at Waterloo*. The fine engravings of his paintings executed by his brother Thomas have made Landseer's paintings well known to the public.

LAND'S END, a headland in Cornwall, the westernmost point of England. There is a lighthouse on the dangerous rocks, the Longships, about a mile to the west.

LANFRANC (about 1005-1089), the first Archbishop of Canterbury after the Norman Conquest. Lanfranc was born at Pavia, Italy. He founded a law school in France and in 1046 was chosen prior of the Benedictine monastery of Bec. William of Normandy made him prior of Saint Stephen at Caen, as a reward for procuring the Pope's consent to William's marriage to his cousin, and in 1070 he made him Archbishop of Canterbury. Among Lanfranc's writings are *Commentaries on the Epistles of Saint Paul*, *A Treatise against Berenger and Sermons*.

LANG, ANDREW (1844-1912), a British scholar who wrote on many different subjects, and is remembered affectionately for

his sympathetic translations of fairy tales. He was educated at Edinburgh Academy, Saint Andrew's University and Balliol College, Oxford, where he took a distinguished position. A most versatile writer, he has published several volumes of ballads and other light verse; *Custom and Myth*, a valuable contribution to the science of comparative mythology; translations of Homer (with collaborators), of Theocritus and of Bion; *Letters to Dead Authors* and *Letters on Literature*, and volumes of fairy tales.

LANGLAND, WILLIAM (about 1332-1400?), an English poet, after Chaucer considered the greatest English poet of his century. His fame rests on his allegorical and satirical poem, *The Vision of Piers Plowman*, in which are vigorously pictured contemporary abuses in Church and State.

LANGLEY, SAMUEL PIERPONT (1834-1906), an American scientist, entitled to fame as one of the inventors of the flying machine, was born at Roxbury, Mass. He was educated in Boston, and he also studied in Europe. He was successively assistant in Harvard Observatory, professor of mathematics in the Naval Academy at Annapolis, director of the Allegheny Observatory; in 1887 became secretary of the Smithsonian Institution. Professor Langley made special observations which have added substantially to our knowledge of the sun's heat. He also extended the invisible portion of the solar spectrum and invented the bolometer, a very delicate instrument for measuring radiant heat. For several years he gave his attention to aerial navigation and was granted an appropriation of \$5,000 by Congress for experiments. His work in this field is related in the article **FLYING MACHINE**.

LANGTRY, MRS. LILLIE (1852-1929), an English actress, born at Le Breton, on the island of Jersey. She was the daughter of a clergyman. After her marriage to Edward Langtry in 1874, she became conspicuous in English society, being known as the "Jersey Lily," on account of her beauty. In 1881 she made her début in London in *She Stoops to Conquer*, and in the following year she appeared in America with great success. After the death of her husband she again married, and in 1903 she returned to America, where she appeared in *The Crossways*, a play written by herself in collaboration with J. Hartley Manners. In 1925 she published her reminiscences, *The Days I Knew*.



LANGUAGE AND GRAMMAR.

The real purpose of language teaching is not to teach pupils to talk; it is to teach them to express their thoughts. The really fundamental thing, then, if successful work in language is to be done either in the home or in the school, is to interest the child in something, it matters comparatively little what, so that he will of his own accord

be willing to make statements or ask questions. When he wants to use words, it is easy enough to teach him what words to use, if he is anxious to talk about a subject he is willing to be taught the best, most effective way to talk about it. From the first grade to the eighth, whether the work be the simple "language work" of the primary children, or the more advanced "grammar and composition," little is ever gained by forcing pupils to talk or write on subjects which are beyond their comprehension or outside their interest.

One of the greatest advances that has been made in recent years in the teaching of such subjects as language lies in this very fact; it is not so very long ago that pupils in grammar schools were assigned for their compositions such topics as "Perseverance," "Success"—abstract topics which could not, in their very nature, call up in the child any spontaneous, vigorous, individual thoughts. To a person who was trained on such composition topics, the subjects that are assigned to pupils now—such subjects as "My Happiest Christmas," "When Father Took Me Fishing"—seem almost too good to be true, just by reason of their relation to the child's life. Nor has this change sprung simply from a desire to cater to the child's likes; it has come from a real perception of the fact that only by allowing a child to talk and write of what is capable of interesting him can the school give to him that greatest of gifts in its power—the ability to use his own language easily and forcefully.

For the benefit of teachers and mothers a graded outline of work is given here, showing the development of the subject throughout the years of grammar school. These lessons should be studied in connection with the article **STORY TELLING**. References to that

discussion will be given in the course of the treatment on language.

First Year

Introduction. When a child starts to school he has command of a certain number of words—many more, probably, than the most of us imagine. Some of these he uses freely; some he is fairly well acquainted with, but uses seldom. Of course there is a very great difference observable in children from different types of homes; the child of intelligent, English-speaking parents will naturally have a much wider vocabulary than the child of foreign or uneducated parents. But to whichever class a child belongs, it is the object of the language work to enlarge and enrich the child's vocabulary and to make surer and more exact his use of those words he does know. Nor are these all the purposes of the language course in the early grades. Imagination should be strengthened, appreciation awakened for what he reads and hears, and a taste cultivated for what is good in literature.

In a sense, every lesson in any subject throughout the day should be a language lesson; for slovenly work in other classes may undo much that is done in the language class. An ungrammatical statement should not be allowed to pass in the number-work class nor a particularly bunglesome expression in the reading class. But of course such things can be dealt with in the language class in a detailed way which is impossible in other classes.

At least the first half of the first year's work will of necessity be oral; not until the sixth month, perhaps, will the children be ready for written statements, which will then be of the very simplest. In connection with these simple written sentences the pupils may be taught the use of the capital letter at the beginning of the sentence and of the period and the question mark at the end. Farther than this formal language work cannot well go in this grade.

Conversation Exercises. The subjects which will suggest themselves to any teacher for the all-important oral exercises of the first grade are practically innumerable. The one great point to be remembered, of course, is that the topic must interest the children; and in connection with this the fact that the same thing does not interest all children. Suppose, for example, that the subject for

conversation is the home—an excellent topic which might well furnish material for half a dozen or more discussions. The girls will naturally be more interested in the interior of the home; the way mother bakes cake or sets the table, or makes the bed or puts the baby to bed will lead them on to talk, once the first embarrassment is over, freely and willingly. The boys, on the other hand, will care more to discuss such subjects as a barn, or father's work, or why they do not like to take care of the lawn. At certain seasons of the year special facts of interest naturally come up in relation to the home which give variety. For instance, at Thanksgiving time both boys and girls will enjoy discussing the preparations which are being made at home, and the guests who are coming. Just before Christmas so many subjects of interest will come up that the pupils will be over-eager to discuss them; they will want to tell about the decorating that goes on at home, about the making and hiding of presents, about their suspicions as to where their own gifts are hidden, about the presents they are making for father and mother. And just such spontaneous subjects for conversation are the teacher's greatest opportunity. Of course the discussion must be kept within bounds; new words must be suggested to the children, wrong ones corrected, false grammatical forms made right. But if the teacher shows that she is interested in what the child is telling, and not just in the manner of the telling, she may slip in her corrections without making the child self-conscious.

Discussion of home affairs may easily be connected with nature study. In the fall the pupils may tell of the preparation for winter at home, of the laying in of food and fuel and warm clothing; and from that they may be led to the subject of the preparation animals make for winter. In the spring, talk of awakening life in the garden and the fields will be natural; wild flowers and tame flowers, the birds that may be seen in the home garden, the butterflies and insects that flit about the flowers are all topics about which the children will talk themselves and gladly hear the teacher talk.

Description by the pupils of places where they have been and of things they have seen stimulates imagination and trains powers of observation, and may also prove highly entertaining. Try, as far as possible, to teach the pupils to have some system in giving descrip-

tions. Let them tell when they saw the object, where they saw it, how it looked and how it made them feel. By forming this habit, a pupil may tell a connected and comprehensive story without needless repetition and unnecessary words.

A conversational exercise in the form of a game may be effectively introduced, the teacher, as in all the conversational work, noting and correcting all faulty construction. One pupil may think of some object, and the pupils and teacher, by asking questions, may try to guess the object in question. All questions and answers should be in complete sentences. For instance, a pupil should ask, "Is it in this room?" or "Do I see it every day?" and the answer should be "No, it is not in this room," or "Yes, you see it every day."

The interweaving of stories and games is a helpful as well as an attractive feature of this work, and the following practical suggestions should prove of assistance to the teacher in this important branch of her work:

Read or tell the class simple but interesting stories, told in words of the pupils' vocabulary, and after they have become familiar with the story allow one to commence it, another taking it up where the first one stops, and continuing until several pupils have taken part in the exercise. Stories which may be effectively used in this way are to be found in the article **STORY TELLING**.

Another attractive form of language work is to let certain pupils take the parts of the different characters in the story and in original sentences tell their part. Such portions of the story as the child may not remember can be supplied by the teacher. In conducting these lessons any incorrect forms or sentences should be immediately corrected, but in such a way that the pupil will not feel self-conscious. *The Little Red Hen* and *The Three Bears* may be treated in this way.

Memory Work. The memorizing of simple poems comes under the head of language work, and can easily be made one of the most attractive parts of that work. Almost all children love the swing and rhythm of the nursery rhymes, and it is well to begin with the learning of a number of them, if the children have not already had them in kindergarten. The following selections should give teachers and mothers all of the Mother Goose rhymes they need:

Daffy-Down-Dilly has come up to town
In a yellow petticoat and a green gown.

Humpty Dumpty sat on a wall;
Humpty Dumpty had a great fall;
And all the King's horses and all the King's
men
Can't put Humpty Dumpty together again.

Rock-a-bye, baby, in the tree top;
When the wind blows, the cradle will rock;
When the bough breaks, the cradle will fall;
Down will come baby, cradle and all.

Little Boy Blue, come, blow your horn;
The sheep's in the meadow, the cow's in the
corn.

"Where's the little boy that looks after the
sheep?"

"He's under the haystack, fast asleep."

Ding, dong, bell,
Pussy's in the well!
Who put her in?
Little Tommy Linn.
Who pulled her out?
Big John Stout.

There was an old woman who lived in a shoe;
She had so many children she didn't know
what to do;
She gave them some broth without any bread;
She whipped them all soundly and put them to
bed.

Little Miss Muffet
Sat on a tuffet,
Eating her curds and whey;
Along came a spider,
And sat down beside her,
And frightened Miss Muffet away.

"Pussy-cat, pussy-cat, where have you been?"
"I've been up to London to look at the queen."
"Pussy-cat, pussy-cat, what did you there?"
"I frightened a little mouse under the chair"

Little Bo-Peep has lost her sheep,
And can't tell where to find them;
Leave them alone, and they'll come home,
Wagging their tails behind them.

The north wind doth blow.
And we shall have snow,
And what will poor Robin do then?
Poor thing!
He'll sit in a barn,
And to keep himself warm
Will hide his head under his wing,
Poor thing!

Three little kittens
Lost their mittens;
And they began to cry,
"Oh! mother dear,
We really fear
That we have lost our mittens."

"Lost your mittens!
You naughty kittens!
Then you shall have no pie."

"Mee-ow, mee-ow, mee-ow."
"No; you shall have no pie."
"Mee-ow, mee-ow, mee-ow,
Mee-ow."

There was a man of our town,
 And he was wondrous wise;
 He jumped into a bramble bush,
 And scratched out both his eyes.
 And when he found his eyes were out,
 With all his might and main
 He jumped into another bush,
 And scratched them in again.

There was an old woman, and what do you think?
 She lived upon nothing but victuals and drink;
 Victuals and drink were the chief of her diet,
 Yet this grumbling old woman could never keep quiet.

When I was a bachelor I lived by myself,
 And all the bread and cheese I got, I put upon a shelf;
 The rats and the mice did lead me such a life,
 That I went to London to get myself a wife.

The streets were so broad and the lanes were so narrow,
 I could not get my wife home without a wheelbarrow;
 The wheelbarrow broke, my wife got a fall;
 Down tumbled wheelbarrow, little wife, and all.

Simple Simon met a pie-man,
 Going to the fair;
 Says Simple Simon to the pie-man,
 "Let me taste your ware."
 Says the pie-man to Simple Simon,
 "Show me first your penny."
 Says Simple Simon to the pie-man,
 "Indeed, I have not any."
 Simple Simon went a-fishing
 For to catch a whale;
 All the water he had got
 Was in his mother's pail!

Old King Cole
 Was a merry old soul,
 And a merry old soul was he;
 He called for his pipe,
 And he called for his bowl,
 And he called for his fiddlers three.
 Every fiddler he had a fiddle,
 And a very fine fiddle had he;
 Twee, tweedle dee, tweedle dee,
 Went the fiddlers three.
 O! there's none so rare as can compare
 With King Cole and his fiddlers three.

There was a crooked man, and he went a crooked mile;
 He found a crooked sixpence against a crooked stile;
 He bought a crooked cat, which caught a crooked mouse,
 And they all lived together in a little crooked house.

I had a pony, his name was Dapple Gray;
 I lent him to a lady to ride a mile away.
 She whipped him, she lashed him,
 She rode him through the mire;
 I would not lend my pony now,
 For all the lady's hire.

Twinkle, twinkle, little star;
 How I wonder what you are!
 Up above the world so high,
 Like a diamond in the sky.

When the glorious sun is set,
 When the grass with dew is wet,
 Then you show your little light,
 Twinkle, twinkle, all the night.

In the dark-blue sky you keep,
 And often through my curtains peep;
 For you never shut your eye
 Till the sun is in the sky.

As your bright and tiny spark
 Lights the traveler in the dark,
 Though I know not what you are,
 Twinkle, twinkle, little star!

After the children have learned one of these rhymes, various uses may be made of it. The simpler ones, the children may be allowed to illustrate on the board; the others they may give in prose, in their own language. This is a valuable exercise, but it should not be carried too far. For instance, in the case of a poem which has real beauty, like some of those which follow, no attempt should be made to translate into prose. The children should memorize them and should not be asked to spoil them by changing them from the beautiful form in which they were written. Of course the list of poems that follows is merely for the teacher to choose from; no first-year class could be expected to learn all of them, or even to take up all of them for study and discussion in class. Other poems may be read aloud by the teacher.

October's Bright Blue Weather

HELEN HUNT JACKSON

O suns and skies and clouds of June,
 And flowers of June together,
 Ye cannot rival for one hour
 October's bright blue weather,

When loud the bumble-bee makes haste,
 Belated, thriftless vagrant,
 And goldenrod is dying fast,
 And lanes with grapes are fragrant:

When gentians roll their fringes tight,
 To save them for the morning,
 And chestnuts fall from satin burrs
 Without a sound of warning:

When on the ground red apples lie
 In piles like jewels shining,
 And redder still on old stone walls
 Are leaves of woodbine twining:

When all the lovely wayside things
 Their white-winged seeds are sowing,
 And in the field still green and fair,
 Late aftermaths are growing:

When springs run low and on the brooks,
In idle golden freighting,
Bright leaves sink noiseless in the hush
Of woods, for winter waiting;

O suns and skies and flowers of June,
Count all your boasts together,
Love loveth best of all the year
October's bright blue weather.

A Visit from St. Nicholas

CLEMENT C. MOORE

'Twas the night before Christmas, when all
through the house
Not a creature was stirring, not even a mouse.
The stockings were hung by the chimney with
care,
In hopes that St. Nicholas soon would be there.
The children were nestled all snug in their
beds.
While visions of sugar plums danced in their
heads;
And Mamma in her kerchief, and I in my cap,
Had just settled our brains for a long winter's
nap—
When out on the lawn there arose such a
clatter
I sprang from my bed to see what was the
matter,
Away to the window I flew like a flash,
Tore open the shutter, and threw up the sash.
The moon on the breast of the new-fallen
snow
Gave a lustre of mid-day to objects below;
When what to my wondering eyes should ap-
pear
But a miniature sleigh and eight tiny reindeer,
With a little old driver, so lively and quick,
I knew in a moment it must be St. Nick!
More rapid than eagles his coursers they
came,
And he whistled and shouted and called them
by name:
"Now, Dasher! now, Dancer! now, Prancer and
Vixen!
On, Comet! on, Cupid, on Donner and Blitzen!
To the top of the porch, to the top of the wall,
Now, dash away, dash away, dash away all!"
As dry leaves that before the wild hurricane
fly,
When they met with an obstacle, mount to
the sky,
So, up to the housetop the coursers they flew,
With a sleigh full of toys and St. Nicholas too.
And then, in a twinkling, I heard on the roof
The prancing and pawing of each little hoof.
As I drew in my head, and was turning
around.
Down the chimney St. Nicholas came with a
bound:
He was dressed all in fur from his head to his
foot,
And his clothes were all tarnished with ashes
and soot:
A bundle of toys he had flung on his back,
And he looked like a peddler just opening his
pack.
His eyes, how they twinkled! his dimples, how
merry!

His cheeks were like roses, his nose like a
cherry;
His droll little mouth was drawn up like a
bow,
And the beard on his chin was as white as the
snow.
The stump of a pipe he held tight in his teeth,
And the smoke, it encircled his head like a
wreath.
He had a broad face and a little round belly
That shook, when he laughed, like a bowl full
of jelly.
He was chubby and plump—a right jolly old
elf,
And I laughed when I saw him, in spite of
myself;
A wink of his eye, and a twist of his head,
Soon gave me to know I had nothing to dread.
He spoke not a word, but went straight to his
work,
And filled all the stockings; then turned with
a jerk,
And laying his finger aside of his nose,
And giving a nod up the chimney he rose.
He sprang to his sleigh, to his team gave a
whistle,
And away they all flew like the down of a
thistle.
But I heard him exclaim, ere they drove out of
sight,
"Happy Christmas to all, and to all a good-
night."

The Wind

ROBERT LOUIS STEVENSON

I saw you toss the kites on high
And blow the birds about the sky;
And all around I heard you pass,
Like ladies' skirts across the grass—
O wind, a-blowing all day long.
O wind, that sings so loud a song!

I saw the different things you did,
But always you yourself you hid.
I felt you push, I heard you call,
I could not see yourself at all—
O wind, a-blowing all day long.
O wind, that sings so loud a song!

O you that are so strong and cold,
O blower, are you young or old?
Are you a beast of field and tree,
Or just a stronger child than me?
O wind, a-blowing all day long,
O wind, that sings so loud a song.

The Tree

BJORNSTJERNE BJORNSON

The Tree's early leaf-buds were bursting their
brown:
"Shall I take them away?" said the Frost,
sweeping down.
"No, leave them alone
Till the blossoms have grown,"
Prayed the Tree, while he trembled from
rootlet to crown.
The Tree bore his blossoms, and all the birds
sung:

"Shall I take them away?" said the Wind, as he swung.

"No, leave them alone
Till the berries have grown."

Said the Tree, while his leaflets all quivering hung.

The Tree bore his fruit in the midsummer glow:

Said the girl, "May I gather thy berries now?"

"Yes, all thou canst see:
Take them: all are for thee,"

Said the Tree, while he bent down his laden boughs low.

Rain

ROBERT LOUIS STEVENSON

The rain is raining all around,
It falls on field and tree,
It rains on the umbrellas here,
And on the ships at sea.

The Swing

ROBERT LOUIS STEVENSON

How do you like to go up in a swing,
Up in the air so blue?

Oh, I do think it the pleasantest thing
Ever a child can do!

Up in the air and over the wall,
Till I can see so wide,
Rivers and trees and cattle and all
Over the countryside—

Till I look down on the garden green,
Down on the roof so brown—
Up in the air I go flying again,
Up in the air and down!

What Does Little Birdie Say?

ALFRED TENNYSON

What does little birdie say,
In her nest at peep of day?
"Let me fly," says little birdie,
"Mother, let me fly away."
Birdie, rest a little longer,
Till the little wings are stronger.
So she rests a little longer,
Then she flies away.

What does little baby say,
In her bed at peep of day?
Baby says, like little birdie,
"Let me rise and fly away."
Baby, sleep a little longer,
Till the little limbs are stronger.
If she sleeps a little longer
Baby, too, shall fly away.

Seven Times One

JEAN INGELow

There's no dew left on the daisies and clover,
There's no rain left in heaven:
I've said my "seven times" over and over,
Seven times one are seven.

I am old, so old I can write a letter;
My birthday lessons are done;
The lambs play always, they know no better;
They are only one times one.

O moon! in the night I have seen you sailing
And shining so round and low;
You were bright! ah, bright! but your light is
failing—

You are nothing now but a bow.

You moon, have you done something wrong in
heaven

That God has hidden your face?

I hope if you have you will soon be forgiven,
And shine again in your place.

O velvet bee, you're a dusty fellow,
You've powdered your legs with gold!
O brave marsh marybus, rich and yellow,
Give me your money to hold!

O columbine, open your folded wrapper,
Where two twin turtle-doves dwell!
O cuckoo-pint, toll me the purple clapper
That hangs in your clear green bell!

And show me your nest with the young ones
in it;

I will not steal them away;

I am old! you may trust me, linnet, linnet—

I am seven times one to-day.

Study of a Poem. As with the nursery rhymes, the children may find much interest in illustrating the poems. Let each child choose a line from some poem, as, for example, *October's Bright Blue Weather*, and draw on the board his idea of the picture the line gives. This little poem is full of pictures.

Of course it is absolutely necessary when children are learning or studying a poem that they shall understand it thoroughly. This does not mean that they must grasp the thought entire; a poem which will appeal very strongly to children may have shades of meaning which they cannot possibly grasp. But they should know the meaning of every word and such facts as will serve to make the poem clear. Let us take, once more, the poem referred to in the last paragraph—*October's Bright Blue Weather*. Before the children even attempt to learn it the teacher should be sure that they can answer the following questions:

Who wrote this poem? (Information for use in reply to this question may be found by the teacher in these volumes.)

What does "rival" mean?

Which does the author like better, October or June?

What does "belated" mean? "thrifless"? "vagrant"?

Why is the bumble-bee called a "thrifless vagrant"?

What are gentians? What does the author mean by speaking of their "fringes"? Why does she speak of the fringes as "rolled tight"?

Why are chestnut-burrs called "satin"?
 What is woodbine?
 What are the "lovely wayside things," and
 what are "white-winged" seeds?
 What are "aftermaths"?
 What is meant by "In idle golden freight-
 ing"?

The children should be encouraged to ask questions about the poem, for often children get and keep misconceptions about some point in a poem which the teacher could never suspect.

Nonsense Verses. There are few children to whom nonsense rhymes do not appeal. The following from Edward Lear is almost certain to be a great favorite:

The Owl and the Pussy-Cat

The Owl and the Pussy-Cat went to sea
 In a beautiful pea-green boat;
 They took some honey, and plenty of money
 Wrapped up in a five-pound note.
 The Owl looked up to the stars above,
 And sang to a small guitar,
 "Oh, lovely Pussy! Oh, Pussy, my love!
 What a beautiful Pussy you are!"

Pussy said to the Owl, "You elegant fowl!
 How charmingly sweet you sing!
 Oh, let us be married—too long we have tar-
 ried—

But what shall we do for a ring?"
 They sailed away for a year and a day
 To the land where the Bong-tree grows,
 And there in a wood a piggy-wig stood
 With a ring in the end of his nose.

"Dear Pig, are you willing to sell for one
 shilling

Your ring?" Said the piggy, "I will."
 So they took it away, and were married next
 day

By the turkey who lives on the hill.
 They dined upon mince and slices of quince,
 Which they ate with a runcible spoon,
 And hand in hand on the edge of the sand
 They danced by the light of the moon.

Nature Studies. The teacher may find interesting material for nature stories in the article NATURE STUDY in these volumes. The articles on the *Dog*, the *Squirrel*, *Ants*, *Trees*, *Flowers*, *Birds*, have facts which may be used as the bases of the nature stories which are so fascinating to children. Many points, too, in the articles BOTANY and ZOÖLOGY may be so used.

Fables. It is perfectly natural for children to personify animals and inanimate objects, and to endow them with all sorts of human qualities. A four-year-old child had two Teddy-bears, one a small dilapidated animal, the other a beautiful big new one. The new one was neglected and the old one

was carried everywhere, and when the child's mother asked the reason for his preference, he replied without hesitation, "The big Teddy never says 'Thank you,' no matter where I take him; but the little Teddy always says 'Thank you, Charles,' just as *nice*." The two playthings had to their own characters as distinct as two human beings could have. And with this faculty so strongly developed it is natural that children should thoroughly enjoy fables. After the following fables have been read the children may be asked to reproduce them in their own language or they may be allowed to illustrate them or to act them out. Frequently children show a surprising amount of dramatic instinct in acting out these simple little stories.

The Fox and the Crow

A Fox once saw a Crow fly off with a piece of cheese in its beak and settle on a branch of a tree.

"That's for me, as I am a Fox," said Master Renard, and he walked up to the foot of the tree.

"Good-day, Mistress Crow," he cried. "How well you are looking to-day; how glossy your feathers; how bright your eye. I feel sure your voice must surpass that of other birds, just as your figure does; let me hear you sing, that I may call you queen of birds."

The Crow lifted up her head and began to caw her best, but the moment she opened her mouth the piece of cheese fell to the ground, only to be snapped up by Master Fox.

"That will do," said he. "That was all I wanted. For your cheese I will give you a piece of advice: Do not trust flatterers."

The Hare and the Tortoise

"O you slow one, you clumsy one, your ugly shape and plodding motions make me roar with laughter," said the Hare to the Tortoise one day as they met in the road.

"Perhaps I am ugly and do move slowly," replied the Tortoise, "but I can beat you in a race to the next river."

This made the Hare laugh more loudly than ever, and a Fox coming along stopped to see what caused the uproar. The Hare explained the joke and finally asked the Fox to hold the stakes and judge the race.

Off started the rivals, and almost in the twinkling of an eye the Hare was out of sight. Only a little cloud of dust remained to show where he had gone. The day was hot and sultry, and soon he was choking with dust.

"Pshaw!" said he; "I can rest here an hour—can even take a nap—and beat that lazy Tortoise to the brook. Suppose he does pass me, I can overtake him quickly enough."

Meanwhile the Tortoise plodded slowly along, kicking up no dust, feeling no heat. When he came up to the Hare the latter was sleeping soundly, and the Tortoise passed on

slowly but surely, moving steadily, never resting a minute.

It was late afternoon when the Hare awoke and looked up and down the road. "I declare," he said; "that slow-poke has not come along yet. I'll take a few nibbles at this clover and then run back and meet him."

The clover was sweet and juicy, and it was some time before the Hare again remembered his race. When he did, he turned to the road and examined the dust. Think how surprised he was to see the trail of the Tortoise leading by him toward the brook. There was no more nibbling of lanches, no more sleeping or resting, for off down the road he ran, covering the ground in long leaps that brought him quickly to the brook, where, sitting lazily at the edge of the water, was the Tortoise, calmly waiting.

"Here, take your money," said the Fox to the Tortoise; adding as he turned to the Hare, "Steady going wins the race."

The Lion and the Mouse

Do you know the story of the Lion and the Mouse? It runs like this:

One day a huge Lion lay sleeping soundly in the shade of a great tree. His strong legs were stretched out limply on the ground, and his shaggy head and powerful jaws looked very beautiful in repose, for the wicked teeth were covered and the fierce eyes closed. Two little Mice, seeing him there, began to play about him, and finally one of them, much braver than the other, ran over the Lion's head, through his tawny mane and beneath his great fore paw.

The Lion's rest was nearly over, and the little feet of the Mouse tickled the huge beast into wakefulness. Opening one eye, he spied the Mouse under his paw, and closed his big toes over his trembling prisoner.

"What are you doing here, you miserable little Mouse?" said the Lion in a terrible roar. "Why do you disturb my noonday nap in the shade? I'll break every bone in your ugly little body."

Down came the big toes, out sprang the awful claws, just as they do on the cat's foot when she dreams of hunting. The Mouse thought surely his last hour had come, and he cried as loud as he could in his weak, trembling voice:

"O Mr. Lion, spare me! spare me! I didn't mean to disturb you, truly I didn't. You see, I was just playing, and your mane was so soft and beautiful, I couldn't keep out of it, and under your paw was just the place to hide, so here I came. I didn't mean any harm—I didn't think you'd care, Mr. Lion. Don't kill me this time. I'll never, never do it again."

"Well, see that you don't," growled the Lion. "Killing you would be small business for me, anyhow."

It was not many days after this that the Lion, while hunting near by, was caught in a net which some hunters had spread for him. He struggled fiercely and roared in anger, but the more he rolled about and the harder he kicked and pawed, the more closely the net clung to him, till at last, weary with fighting,

he lay bound and helpless, an easy prey for the hunters when they should return.

The Mouse which the Lion had spared lived in a little round nest of grass not far from where the Lion was caught. He heard the noise of the struggle and sat at home with a beating heart, afraid to venture out of doors while such a furious combat was going on. When the Lion grew quiet, however, the Mouse stole out, and soon saw what was the matter.

"O Mr. Lion," he said, "you are the very Mr. Lion that let me go that other day, aren't you? And now the hunters will kill you if you can't get away, won't they? I'll help you."

"What can you do, you little mite?" growled the Lion. "Better run away yourself, or when the hunters come for me they'll step on you."

"O, I can help. I can gnaw the ropes in two. I'd like to do it," said the mouse. "Just you keep still till I tell you to move."

So the Mouse began to gnaw on the big ropes. It was a hard task, and his lips grew sore and his sharp teeth ached, but he kept on bravely till one after another the ropes gave way and the King of the Woods was almost free."

"Wait just a few minutes more," said the Mouse, as he paused to rest his little jaws. "Don't jump up till I get out of the way. I'll tell you when."

In a little while the last rope was cut in two, and the Mouse, scrambling down from the Lion's big head, called out:

"Now jump up, Mr. Lion; you're free. Aren't you glad you didn't kill me the other day?"

The big fellow stood up on his feet, shook himself a few times, stretched his aching limbs, washed his face and walked away. But just as he was going he looked back over his shoulder and sang out, "Little friends are great friends."

The Mice and the Cat

A gentleman once owned a Cat that was a very fine mouser. She hunted so much that after a time she had caught and killed nearly all the Mice in the gentleman's house. The remaining Mice were very much frightened and called a council to see what could be done. They met secretly in their hall behind the coal-bin and locked the doors carefully before they began to talk. Many plans were proposed and discussed, but the Mice could agree on nothing.

Finally a dapper young Mouse arose and said:

"Mr. President, I wish to propose a plan. It is so novel and so excellent that I am certain every one of you will approve it. A little silver bell must be hung about the Cat's neck. Then every step she takes will make the bell tinkle, and we shall have warning in time to run to our holes before she comes too close! Isn't that a perfect plan? We can then live in safety and happiness in spite of this wonderful Cat."

The young Mouse took his seat, smiling with an air of complacent pride, and from the

other Mice came the sound of lively applause.

"Mr. President and Fellow Mice," interrupted an old gray-whiskered Mouse who rose from the back of the hall and looked his companions over with a merry twinkle in his eye, "the plan proposed by the last speaker is indeed an admirable one, but I fear there is one slight drawback to it. The honorable gentleman has not told us who is to hang the bell around the Cat's neck."

Pictures. Children of the first grade are not too young to begin to take an interest in pictures. Murillo's *Melon Eaters*, (see PAINTING), is a picture which will appeal to children; use this and others, and have the children tell stories about what they see in the pictures. Such exercises strengthen the mental faculties.

Second Year

Introduction. The work of the second grade is much like that of the first, of which it really forms but a continuation. There is, however, a little more emphasis placed on written work than was possible in the first grade. But it must not be forgotten that the chief thing is still the oral work, and the teacher should always be certain that the pupils can tell things before they are allowed to write them.

Written Work. As an illustration of the way in which written work may be presented in this class, let us take a simple subject—the orange, for example. Let each child, after the topic has been discussed in class, hand in a paper on which are written five or six sentences describing the appearance of the orange. These sentences may be somewhat as follows:

The orange is pretty.
The orange is round.
The orange is yellow.
The skin of the orange is rough.
The skin of the orange is shiny.

The arrangement, form and spelling of the words are criticized, and the papers are handed back for rewriting. After further discussion of the orange, its taste, its uses, the places it grows, other papers similar to the first may be written, dealing with these other points. After all the groups have been corrected, they may be combined, but no attempt should be made in this grade to have the children produce anything like formal compositions.

Formal Language Work. Then, too, a little more attention is given in this grade to the formal side of language work, though per-

haps the work is even yet too elementary to deserve that name. Let the pupils, after reading a paragraph in their readers, pick out words with "a" before them, and words with "an" before them. Explain to them the difference and write on the board exercises like the following, asking the children to fill in the blanks:

I have apple.
John has dog.
Have you aunt?
I have book and ink well.
Mary got doll and Frank got engine.

The use of capital letters to begin sentences and of the simplest marks of punctuation, begun in the first grade, should be continued in this, so that the pupils feel perfectly acquainted with the rules.

The use of the singular and plural forms of verbs and of nouns may be introduced in this grade. The children will readily grasp the difference between singular and plural in the regular forms, and irregular forms should not be introduced until later.

Nature Study. The language work can again be combined profitably with the nature-study work, and flowers which are brought to school by the pupils can well be used as a basis. Of course the early lessons should deal with the simpler flowers—the violet, the wild rose, the tulip, the daisy. Point out the various parts of the flower and describe their uses, in so far as the pupils may be expected to understand them. When the children have become familiar with the flowers, see how many sentences they can write descriptive of each one.

Conversation Exercises. As in the first grade, the emphasis is still on the oral expression of ideas, but the topics should of course be varied. Interesting lessons, for example, may be drawn from the lives of different races of people. The teacher, of course, will have to give most of this material to the children, they being called on to reproduce parts of it for her. In *THE AMERICAN EDUCATOR* will be found many articles of which the teacher may make excellent use in preparing such material. One lesson could be given on the *Cave Dwellers*, while the articles on *Cliff Dwellers*, *Eskimo* and *Indians* should form the basis for several lessons each. After the pupils have become familiar with several of these topics, call on some child to say or to write on the board sentences descriptive of

some one of them, the other children to guess of what he is thinking. If, for instance, the child chosen says, "I live in a hut. I eat fat food. I wear fur clothes. I ride on a sled," the other children should have no difficulty in guessing "Eskimo."

Acting Stories. In this grade, as in the first, much good work may be done on the basis of stories told by the teacher. A story is read or told and the children are asked to reproduce it as nearly as possible. When they have gone over it often enough so that they are fairly familiar with it, but not so often that it has lost its charm for them, they should be allowed to dramatize it. The teacher should offer them as little help as possible in this dramatization; the children themselves should arrange the dialogue and work out the scenes. The result may not be as attractive as it would be if the teacher managed the affair, but it will be far more helpful to the children. There are a number of stories in the article **STORY TELLING** which will lend themselves very well to this treatment. *The Ugly Duckling*, for instance, has about all the good points that any story could have. It is absorbingly interesting to children; it has a good moral which is not too plainly pointed out; it has plenty of dialogue, and offers opportunity for the making up of more; it has a large number of characters, all of whom have distinct, interesting personalities; it divides itself readily into scenes.

The first scene might be the farmyard, with the mother duck, the family of little ducks, the old Spanish duck, the turkey-cock, and other fowls. In the second scene, that in the marsh, will appear the ugly duckling, the wild ducks, the two wild geese, the hunters and the dog. The old woman's cottage will give the third scene, a very interesting one, in which appear the duckling, the old woman, the hen and the cat. Some of the children will have a chance to show any real dramatic instinct which they may possess in this scene. In the fourth scene, the last one, will appear the swan-duckling, the other swans, and the children. The teacher should have talked the story over with the children before it is acted out so that she feels certain they appreciate the outstanding features of each character.

The Wolf and the Seven Kids will also be a good story for the children to play. *Rhocus*, while a good story to tell, is not quite so well adapted to dramatization, as it

has few characters and only a little action.

Hiawatha. Much of the work of this year may well deal with *Hiawatha*; there is no poem or story which the children enjoy more if it is presented rightly. The reproduction of the story by the children, the dramatization of certain scenes, the memorizing of specially fine passages should all form part of the work. The poem should not, of course, simply be taken up from beginning to end in its order; some parts are obviously more simple than others, and should be taken first. The story of *Hiawatha's* childhood, given in Chapter III, verse 64 to the end, is the best portion with which to begin. As in all lessons on *Hiawatha*, the teacher should first tell the story simply but fully in prose; then she should read the passage as understandingly and as musically as possible. After they have got the swing of the lines, the children will be glad to learn parts of the passage. By dividing the work up, each child learning a part, the whole passage may be memorized and given, each child speaking in his turn.

For the dramatic part of the work on this passage, a dialogue may be arranged between *Hiawatha* and *Nokomis* about all the wonderful things the child sees about him. The dialogue will be about as follows:

Hiawatha sits and sings:

"Wah-wah-taysee, little fire-fly,
Little, flitting, white-fire insect,
Little, dancing, white-fire creature,
Light me with your little candle
Ere upon my bed I lay me,
Ere in sleep I close my eyelids!"

Hiawatha (glancing over his shoulder at the moon): What is that, *Nokomis*—what are all those flecks and shadows on the brightness?

Nokomis:

"Once a warrior, very angry,
Seized his grandmother, and threw her
Up into the sky at midnight;
Right against the moon he threw her;
'Tis her body that you see there."

Hiawatha (pointing to the rainbow in the east): What is that, *Nokomis*? What are all those colors stretched across the heavens?

Nokomis:

"'Tis the heaven of flowers you see there.
All the wild flowers of the forest,
All the lilies of the prairie,
When on earth they fade and perish,
Blossom in that heaven above us."

Hiawatha (listening in fright to the owls): What, O what is that, *Nokomis*?

Nokomis:

"That is but the owl and owlet,
Talking in their native language,
Talking, scolding at each other."

The owl loves the owlet and takes good care of it; when I sang you to sleep when you were a fretful baby in your linden cradle, did I not sing?

"Ewa-yea! my little owlet!
Who is this, that lights the wigwam?
With his great eyes lights the wigwam?
Ewa-yea! my little owlet!"

The lines which deal with little Hiawatha's hunting may also be acted out, one child being Hiawatha and the others the various wild animals.

The poem of *Hiawatha* is too long to be given here. Probably there are few school-rooms where a copy of it is not to be found; in case, however, the school library does not contain the poem, it may be secured in very cheap but satisfactory form from any dealer in school books.

Memory Poems. The children in this grade may of course be expected to do more work in memorizing than those of the first grade. In every school there will be found children who are eager to "learn by heart" and who do it very easily; others seem to have to be driven to it. But there is nothing that so helps the memory as learning things that are worth while and may be reviewed occasionally, and no child should be permitted to shirk all work of memorizing poems. Those who wish to, of course, may be allowed to learn more than the required number. The following selections will be found well adapted to second-year children:

Where Go The Boats?

ROBERT LOUIS STEVENSON

Dark brown is the river,
Golden is the sand.
It flows along forever,
With trees on either hand.

Green leaves a-floating,
Castles of the foam,
Boa's of mine a-boating—
Where will all come home?

On goes the river
And out past the mill,
Away down the valley,
Away down the hill.

Away down the river,
A hundred miles or more.
Other little children
Shall bring my boats ashore.

Autumn Fires

ROBERT LOUIS STEVENSON

In the o'er gardens
And all up the vale,
From the autumn bonfires
See the smoke trail!

Pleasant summer over
And all the summer flowers,
The red fire blazes,
And the grey smoke towers.

Sing a song of seasons!
Something bright in all!
Flowers in the summer,
Fires in the fall!

While Shepherds Watched

While shepherds watched their flocks by night,
All seated on the ground,
The angel of the Lord came down
And glory shone around.

"Fear not!" said he, for mighty dread
Had seized their troubled mind;
"Glad tidings of great joy I bring
To you and all mankind:

"To you in David's town this day
Is born of David's line
A Savior who is Christ the Lord,
And this shall be the sign:

"The heavenly babe ye there shall find
To human view displayed
All meanly wrapped in swathing-bands
And in a manger laid."

Thus spake the seraph; and forthwith
Appeared a shining throng
Of angels praising Christ the Lord,
Who thus addressed their song:

"All glory be to God on high,
And to the earth be peace;
Goodwill henceforth from heaven to men
Begin and never cease."

The Day Is Done

HENRY W. LONGFELLOW

The day is done, and the darkness
Falls from the wings of Night,
As a feather is wafted downward
From an eagle in his flight.

I see the lights of the village
Gleam through the rain and the mist,
And a feeling of sadness comes o'er me
That my soul cannot resist:

A feeling of sadness and longing,
That is not akin to pain,
And resembles sorrow only
As the mist resembles rain.

Come, read to me some poem,
Some simple and heartfelt lay,
That shall soothe this rest'less feeling,
And banish the thoughts of day.

Not from the grand old masters,
Not from the bards sublime,
Whose distant footsteps echo
Through the corridors of Time.

For, like strains of martial music,
Their mighty thoughts suggest

Life's endless toil and endeavor;
And tonight I long for rest.

Read from some humbler poet,
Whose songs gushed from his heart,
As showers from the clouds of summer,
Or tears from the eyelids start;

Who, through long days of labor,
And nights devoid of ease,
Still heard in his soul the music
Of wonderful melodies.

Such songs have power to quiet
The restless pulse of care,
And come like the benediction
That follows after prayer.

Then read from the treasured volume
The poem of thy choice,
And lend to the rhyme of the poet
The beauty of thy voice.

And the night shall be filled with music,
And the cares that infest the day
Shall fold their tents, like the Arabs,
And as silently steal away.

Windy Nights

ROBERT LOUIS STEVENSON

Whenever the moon and stars are set,
Whenever the wind is high,
All night long, through the dark and wet,
A man goes riding by.
Late at night when the fires are out,
Why does he gallop and gallop about?

Whenever the trees are crying aloud
And ships are tossed at sea,
By on the highway, low and loud,
By at the gallop goes he.
By at the gallop he goes, and then
By he come back at a gallop again.

The Brown Thrush

LUCY LARCOM

There's a merry brown thrush sitting up in a tree;

"He's singing to me! He's singing to me!"
And what does he say, little girl, little boy?
"Oh, the world's running over with joy!
Don't you hear? Don't you see?
Hush! look! In my tree
I'm as happy as happy can be!"

And the brown thrush keeps singing, "A nest do you see,

And five eggs hid by me in the juniper tree?
Don't meddle! don't touch! little girl, little boy,

Or the world will lose some of its joy!
Now I'm glad! now I'm free!
And I always shall be,
If you never bring sorrow to me."

So the merry brown thrush sings away in the tree,

To you and to me, to you and to me;
And he sings all the day, little girl, little boy,
"Oh, the world's running over with joy!
But long it won't be,
Don't you know? Don't you see?
Unless we're as good as can be."

Robert of Lincoln

WILLIAM CULLEN BRYANT

Merrily swinging on brier and weed,
Near to the nest of his little dame,
Over the mountain-side or mead,
Robert of Lincoln is telling his name:
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
Snug and safe in this nest of ours,
Hidden among the summer flowers.
Chee, chee, chee.

Robert of Lincoln is gayly drest,
Wearing a bright black wedding-coat;
White are his shoulders and white his crest,
Hear him call in his merry note:
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
Look, what a nice new coat is mine,
Sure there was never a bird so fine.
Chee, chee, chee.

Robert of Lincoln's Quaker wife,
Pretty and quiet, with plain brown wings
Passing at home a patient life,
Broods in the grass while her husband sings:
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
Brood, kind creature; you need not fear
Thieves and robbers while I am here.
Chee, chee, chee.

Modest and shy as a nun is she;
One weak chirp is her only note.
Braggart and prince of braggarts is he,
Pouring boasts from his little throat:
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
Never was I afraid of man;
Catch me, cowardly knaves, if you can!
Chee, chee, chee.

Six white eggs on a bed of hay,
Flecked with purple, a pretty sight!
There as the mother sits all day,
Robert is singing with all his might:
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
Nice good wife, that never goes out,
Keeping house while I frolic about.
Chee, chee, chee.

Soon as the little ones chip the shell
Six little mouths are open for food;
Robert of Lincoln bestirs him well,
Gathering seed for the hungry brood.
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
This new life is likely to be
Hard for a gay young fellow like me.
Chee, chee, chee.

Robert of Lincoln at length is made
Sober with work, and silent with care;
Off is his holiday garment laid,
Half forgotten that merry air:
Bob-o'-link, bob-o'-link,
Spink, spank, spink;
Nobody knows but my mate and I
Where our nest and our nestlings lie.
Chee, chee, chee.

Summer wanes; the children are grown;
 Fun and frolic no more he knows;
 Robert of Lincoln's a humdrum crone;
 Off he flies, and we sing as he goes:
 Bob-o'-link, bob-o'-link,
 Spink, spank, spink;
 When you can pipe that merry old strain,
 Robert of Lincoln, come back again.
 Chee, chee, chee.

Old Gaelic Lullaby

Hush! the waves are rolling in,
 White with foam, white with foam;
 Father toils amid the din;
 But baby sleeps at home.

Hush! the winds roar hoarse and deep—
 On they come, on they come!
 Brother seeks the wandering sheep;
 But baby sleeps at home.

Hush! the rain sweeps o'er the knowes,
 Where they roam, where they roam;
 Sister goes to seek the cows;
 But baby sleeps at home.

A good nonsense poem for the children of
 this grade is from *Through the Looking Glass*,
 by Lewis Carroll.

The Walrus and the Carpenter

The sun was shining on the sea,
 Shining with all his might;
 He did his very best to make
 The billows smooth and bright—
 And this was odd, because it was
 The middle of the night.

The moon was shining sulkily,
 Because she thought the sun
 Had got no business to be there
 After the day was done—
 "It's very rude of him," she said,
 "To come and spoil the fun!"

The sea was wet as wet could be,
 The sands were dry as dry.
 You could not see a cloud, because
 No cloud was in the sky:
 No birds were flying overhead—
 There were no birds to fly.

The Walrus and the Carpenter
 Were walking close at hand;
 They wept like anything to see
 Such quantities of sand:
 "If this were only cleared away,"
 They said, "it would be grand!"

"If seven maids with seven mops
 Swept it for half a year,
 Do you suppose," the Walrus said,
 "That they could get it clear?"
 "I doubt it," said the Carpenter,
 And shed a bitter tear.

"O Oysters, come and walk with us!"
 The Walrus did beseech.
 "A pleasant walk, a pleasant talk,
 Along the briny beach;

We cannot do with more than four,
 To give a hand to each."

The eldest Oyster looked at him,
 But never a word he said:
 The eldest Oyster winked his eye,
 And shook his heavy head—
 Meaning to say he did not choose
 To leave the oyster bed.

But four young Oysters hurried up,
 All eager for the treat:
 Their coats were brushed, their faces washed,
 Their shoes were clean and neat—
 And this was odd, because, you know,
 They hadn't any feet.

Four other Oysters followed them,
 And yet another four;
 And thick and fast they came at last,
 And more, and more, and more—
 All hopping through the frothy waves,
 And scrambling to the shore.

The Walrus and the Carpenter
 Walked on a mile or so,
 And then they rested on a rock,
 Conveniently low:
 And all the little Oysters stood
 And waited in a row.

"The time has come," the Walrus said,
 "To talk of many things;
 Of shoes—and ships—and sealing wax—
 Of cabbages—and kings—
 And why the sea is boiling hot—
 And whether pigs have wings."

"But wait a bit," the Oysters cried,
 "Before we have our chat;
 For some of us are out of breath,
 And all of us are fat!"
 "No hurry!" said the Carpenter.
 They thanked him much for that.

"A loaf of bread," the Walrus said,
 "Is what we chiefly need:
 Pepper and vinegar besides
 Are very good indeed—
 Now if you're ready, Oysters dear,
 We can begin to feed."

"But not on us!" the Oysters cried,
 Turning a little blue.
 "After such kindness, that would be
 A dismal thing to do!"
 "The night is fine," the Walrus said,
 "Do you admit the view?"

"It was so kind of you to come!
 And you are very nice!"
 The Carpenter said nothing but
 "Cut us another slice:
 I wish you were not quite so deaf—
 I've had to ask you twice!"

"It seems a shame," the Walrus said,
 "To play them such a trick,
 After we've brought them out so far
 And made them trot so quick!"
 The Carpenter said nothing but
 "The butter's spread too thick!"

"I weep for you," the Walrus said:
"I deeply sympathize."

With sobs and tears he sorted out
Those of the largest size,
Holding his pocket-handkerchief
Before his streaming eyes.

"Oh, Oysters," said the Carpenter,
"You've had a pleasant run!
Shall we be trotting home again?"
But answer came there none—
And this was scarcely odd, because
They'd eaten every one.

Almost all of the poems which are given here and in the first-year work are by very well-known poets. Children will have more interest in a poem if they are taught just a little, the very simplest facts about its author, and a teacher can readily provide herself with such facts by reference to the other volumes of this set.

Type Study of a Poem. As a type of the way a poem may be studied in this year, let us take Bryant's *Robert of Lincoln*. Of course all that is given here cannot be given to the children in one lesson, or in two; the teacher is the best judge of the way in which the material should be divided. When there is a possibility that the children may be able to answer, questions should be asked, even, in some instances, questions which suggest the answers. Much of the information, however, the teacher will have to give the pupils.

After reading the poem aloud, the teacher may ask the children, "Don't you think you would like to know something about a man who could write such a bright, lively poem about a little bird?" and she may give them, in as interesting a manner as possible, some such brief biography as follows:

The man who wrote this poem was born in a little log house, over a hundred years ago. Children in those days did not always have things made as pleasant for them as children do now; their fathers and mothers loved them just as much, but they did not show it in the same way. They were more strict and stern, and seldom thought of playing with the children or planning games for them. And they were very ready to punish, taking down the bundle of birch sticks that hung behind the stove. Little William Cullen Bryant must often have been punished in this way, though he was by no means a bad boy. He was rather a quiet child, but I think we should have liked him, for he tells, as if he really enjoyed it, about the exciting times they used to have building snow forts and fighting over them. His accounts of their battles, with their heaps of snowballs and their attacks and retreats, sound very much like the stories boys of these days might tell their fathers

and mothers when they go home after a winter day's play.

But Bryant did other things besides playing. He studied hard, and before he got to the age when most boys stop playing he had written some poems that grown people were very glad to read. When he grew up he wrote many, many poems, most of which you will have to wait until you are older to enjoy. This little poem, however, you can understand now; and if you hear the grown people talking of William Cullen Bryant you may feel that you know him, too.

The name of the bird that Bryant is talking about is the bobolink, but the poet pretends that "bobolink" is just the bird's nickname for itself, and that its real name is Robert of Lincoln.

Did you ever see a bobolink? What color is he? If you do not know, listen while I read the second stanza again.

Did you ever see a Quaker in the plain drab clothes that the Quakers wear? What does the poet mean by speaking of the bobolink's "Quaker wife"? Are the mother-birds usually as brightly dressed as the father-birds?

Do you think the bobolink is good to his mate? Does he fly away to have a good time, or does he stay by the nest? Is the nest built in a tree or on the ground? How do you know?

How many eggs are in the nest? What color are they? Who are the "thieves and robbers" from whom Robert of Lincoln promises to protect his mate? Do you think perhaps they may be thoughtless boys and girls? Do you think he could really protect her? Is this why the poet calls him "prince of braggarts"?

When the little birds come is Robert of Lincoln a good father? Why does Bryant say that his "holiday garment" is laid off and his song "half forgotten"? (The bird loses its brilliant plumage after the nesting season is over, and like most birds, rarely sings in the autumn.)

The bobolink flies to the southland, as do so many of our summer birds, before the coming of winter, and the poet begs him to come back when he can sing his cheerful song again.

Let us see whether there are words in this poem which we do not understand or which we should not be likely to use. I think we shall find very few. What does "dame" mean in the first stanza? What does "mead" mean? "crest"? "brood"? "braggart"? "flecked"? "bestirs"? "waned"? "humdrum crone"?

Sometimes poets use many words in their poems which are not often used in ordinary every-day talk; but our poet has used very few such, and that is one reason why this is a good poem for children.

If you ever hear a bobolink, listen to him carefully and see whether he really says:

"Bob-o'-link, bob-o'-link,
Spink, spank, spink."

Fables. A child never really gets too old to enjoy a fable; as soon as he has outgrown

liking it for one reason he begins to like it for another. But a second-grade child is still at the point when he likes it in the most childish way—just as an imaginative story. The teacher should take care not to point out the moral too specifically; if the tale is well told, the child will catch the moral, never fear.

The Goose that Laid the Golden Eggs

Once upon a time there lived a man who had a handsome Goose that every day laid a large golden egg. The man thought the Goose must have much gold inside of her, and so one day he wrung her neck, and found that she was just like any other Goose. Thinking to find wealth, he lost the little he had.

The Shepherd Boy and the Wolves

In the summer time the shepherds used to drive their sheep out into the mountains some distance away from their homes, where the grass was green and tender and the sheep fattened rapidly.

But there was always some danger in this, for the wolves hid in the mountains and often came down and carried off the little lambs, and even killed the old sheep themselves. So the shepherds never thought it was safe to leave the flocks alone, and some young lad was always chosen to watch them during the day, while the shepherds worked on the little fields they cultivated near at hand. It wasn't a hard task for the boy unless the wolves came in sight, and then he was so near that by calling loudly he could bring the shepherds to his aid. One lad they sent out to do this work was a mischievous little chap, who thought it would be great sport to bring the shepherds about him even if no wolf was in sight. Accordingly, he ran up the side of a high rock, shouting at the top of his voice "Wolf! Wolf!" and swinging his arms wildly about.

The shepherds saw and heard him and came running to the spot, where they found nothing but the lively boy, laughing merrily. They reproved him for his mischief and went back to their work.

In a few days they had forgotten all about his pranks, and when they saw him again upon the rock, swinging his arms and calling "Wolf! Wolf!" they ran a second time, with their hoes and spades in their hands to beat off the attack. Once more they found that the sheep were perfectly safe, and that no wolves were in sight, and the boy laughed noisily at their surprise. This time they were very angry and scolded the boy roundly for his deception.

More days passed, and nothing happened; but then as the boy was lying idly in the warm sun, he saw the sheep huddle together in alarm and finally scamper off over the hill with wolves in close pursuit.

Frightened almost out of his wits at the very real danger, the boy climbed again upon the rock shrieking "Wolf! Wolf!" at the top

of his voice, waving his hands, stamping, and swinging his hat as though his very life depended on it.

The shepherds looked up and saw the boy, but returned to their work. They had been twice fooled and were not going to risk the chance again. No matter how loudly the boy called or how much he wept, they continued with their work, paying no further attention to what the lad said, even when he ran to them and assured them that he was telling the truth.

When the sheep did not return that night, the shepherds went out to find them, but though they hunted long and earnestly they could discover nothing but torn and bleeding bodies, for every sheep had been killed.

Naturally they laid all the blame on the shoulders of the boy.

The Wolf and the Lamb

As a Wolf was lapping at the head of a running brook, he spied a stray Lamb paddling at some distance down the stream. Having made up his mind to seize her, he thought himself how he might justify his violence.

"Villain," said he, running up to her, "how dare you muddle the water that I am drinking?"

"Indeed," said the Lamb humbly, "I do not see how I can disturb the water, since it runs from you to me, not from me to you."

"Be that as it may," replied the Wolf, "it was but a year ago that you called me names."

"Oh, Sir!" said the Lamb, trembling, "a year ago I was not born."

"Well," replied the Wolf, "if it was not you, it was your father, and that is all the same; but it is no use trying to argue with me." And he fell upon the Lamb and tore her to pieces.

Picture Study. Every schoolroom should have pictures, good pictures, even if cheap, for its walls, or at least in an unframed state for use in classes. Types of the pictures which may be studied with a class of this age are to be found in article **PAINTING**, in these books. Such pictures may be treated so that the children will feel no interest in them and will actually dislike them, or they may be treated so that the children will love them all their lives and find in them beautiful lessons.

Third Year

Introduction. There is a little more of a change between the third year and the second year than there was between the second and the first. Much of the second-year work is continued, but increased emphasis is placed on certain points that were passed over lightly in the earlier years. The children have reached the point when they can really read for their own pleasure, and

where they see that writing is something more than an exercise in the full-arm movement. Composition work thus becomes very much more important and will be dealt with more fully in the outline for this year's work.

Correction of Errors. Of course even in the lower grades the teacher corrects errors in the speech or the written work of the pupils; but the emphasis must be so strong on the securing of spontaneous expression of thought by the children that the work of correcting errors can be at the best but incidental. Each correction made stands by itself—little attempt can be made at enforcing rules of speech. But in the third grade conditions are a little different. The children, if their work and the teacher's work has been well done in the lower grades, have learned to express themselves with some degree of freedom, and there is less danger of frightening a shy child into not-to-be-broken silence by the correction of a verbal error. This does not mean that rules can be taught to children at this time; that generalizations may be made to which they must make their speech conform. But it does mean that right forms can be held up before them so persistently that they will themselves make the generalizations.

Every teacher has perhaps wondered whether if children never heard mistakes in grammar their own speech would be free from them. This is a question which will probably never be settled; but it is certain that the kind of speech they hear at home and at school and on the street has everything to do with what a child's language is to be. Thus some children speak comparatively correctly, while others seem scarcely able to utter a sentence without making some mistake. Moreover, common mistakes differ in different parts of the country and in different parts of the city, so that the teacher has always to adapt her work of this nature to her own pupils.

There are a few general rules which may be laid down in regard to this work. First, it should be systematic. Attention should not shift rapidly from one mistake to another but should center on one point until it is certain that the children have that point clearly in mind. One or more common errors should be covered each month.

Second, pupils should first of all be made to see that they do commit the error before they are asked to spend time in correcting it.

Third, technical rules should not be brought into the discussion; third-year pupils are too young to feel strongly the force of a grammatical rule. Moreover, they will easily establish the rule for themselves if they are thoroughly drilled in specific instances.

Fourth, attention should not often be called to the wrong form. It is not wise with children of the third grade to write on the board such a sentence as "I done it," and ask what is wrong with it. The mere seeing of the wrong form has a tendency to impress it on their minds.

Perhaps the simplest way to deal with the matter is for the teacher to write on the board sentences, leaving blanks for the doubtful forms. These blanks the pupils may be asked to fill in. The sentences should be numerous enough for the children to perceive from them that the right form does not vary. Later, the children may be asked to write independently sentences containing the correct forms.

A good example with which to begin drill in the correction of errors is the distinction between *teach* and *learn*. Most pupils may be trusted to confound them. Let the first sentences be as simple as possible:

1. I ---- my lesson.
2. My sister ---- school.
3. John ---- to skate
4. His older brother ---- him.
5. I ---- my lesson and ---- it to my little sister.
6. If my teacher did not ---- me, I could not ---- so well.
7. I must ---- to read before I can ---- anybody else.

These are merely samples; many more sentences will be needed in a typical drill. Nor is it enough that the children's eyes be led to see the difference between the correct and the incorrect forms; their ears must recognize it too. That is, the sentences should all be read aloud, both by the teacher and by the pupils.

The use of *their* and *there*, and of *to*, *too* and *two* furnishes material for some good work. Such sentences as the following may be used:

1. The book is ---- on the table.
2. Who put it ---- ?
3. John and Frank lost ---- hats.
4. ---- mothers may scold them.
5. All the children may put ---- books ---- on the table.
6. ---- is a flower in my vase.
7. Do you know where ---- house is?

8. No, I have never been ----
9. I have ---- apples.
10. I will give them ---- you.
11. It is ---- hot in this room.
12. This candy is ---- sweet.
13. ---- boys have gone ---- the store.
14. What have they gone ---- get?
15. They have gone ---- get ---- loaves of bread.
16. Will ---- verses be ---- much for you ---- learn?
17. No, it will not be ---- much.

Saw and *seen* and *did* and *done* trouble many children. A child is almost as likely to say "I *seen* it" as "I *saw* it," so that opportunity for introducing the drill will not be difficult to find. Of course, the correction should not be made so that it will embarrass unnecessarily any child. *Sit* and *set* are also stumbling-blocks—and sometimes for others than children. It may be necessary in this instance for the teacher to write on the board a number of correct sentences so that the children may perceive the distinction:

1. I SET my doll in the chair.
2. She SITS there quietly.
3. The farmer SETS the hen on the eggs.
4. The hen SITS on the eggs.
5. The dress SITS well.

Lay and *lie* cannot very well be taken up at this time, since the fact that *lay* is the past tense of *lie* complicates matters.

The personal pronouns offer opportunity for very helpful drill; the correct form and the proper position may both be emphasized. Of course the difficulty as to the proper form comes largely when the pronoun is used with a noun, so that the *case* force is not felt. If simple sentences in which the pronoun stands alone are given first, there will be less danger of error.

First person:

1. ---- am going skating.
2. Tom and ---- went skating.
3. She gave ---- an apple.
4. She gave Mary and ---- an apple.
5. Father wrote a letter to ----.
6. Father wrote letters to Tom and ----.
7. Jane and ---- were sent home.
8. He sent Jane and ---- home.

Third person (masculine or feminine):

1. ---- and I are friends.
2. I gave the apple to ----.
3. They asked ---- and me.
4. John's teacher likes ----.
5. Our teacher likes ---- and me.

If children are taught when they are young that *awful* has a distinct meaning of its own, and has none of the sense of *very*, the use of it for *very* will not be so much a matter of course to them when they grow up. Make

them feel the bigness of the word, and the fact that at times it is the only word which will express an idea, and show them how it is wasted by being made to do duty for *very*.

The above will show the kind of work that may be done in the third grade toward the correction of common errors. Every teacher will encounter in her own schoolroom others that may serve as the basis for similar exercises.

Composition Work. Besides such exercises as those outlined above, and the conversational exercises similar to those in the two lower grades which should be continued in this, composition work of a more or less formal character is now taken up. This work should be based on the subjects discussed in the oral lessons, for children in the third grade should not be asked to write on any subject until the teacher is sure that they have a thorough understanding of it. And this knowledge should extend not only to the content, but in a measure to the form as well. That is, the statements of which the composition is composed should not be set down hit or miss, with no obvious connection with what precedes or follows. Related sentences should be together. To accomplish this, an outline should be drawn up before the pupils begin to write. Of course the teacher may make the outline and put it on the board, allowing the children to fill it out, but this is not a particularly helpful method. A far more valuable exercise is to have the pupils give suggestions as to points that should be treated, which the teacher may then arrange in proper order.

Suppose, for instance, that the subject chosen for a composition is "My Last Birthday." When the children are asked to talk on the subject, such statements as the following will probably be forthcoming:

"It was in the summer." "I got a doll." "I had a party." "I got a bicycle." "We had a picnic." "I had on a new pink dress." "There were candles on my cake." "Ten children came to my party." "I was eight years old." "We had pink and white candies and frosted cookies." "The children brought me presents." "There were red roses on the table." "I was nine years old." "I went to my grandmother's house."

After this jumble of statements has been set down the teacher may put them in order before the pupils' eyes. First will come the "when" statements, then the "where" statements, then the "what" statements, until the

outline appears in the form of a series of questions, somewhat as follows:

When was your birthday? Where did you spend it? Who was with you? What presents did you get? What did you do? What did you have to eat?

If the children write on some such outline, they will simply have the feeling that they are answering in a natural way natural questions. The unpleasantness that always attaches to a formal "composition" will be absent.

Every teacher will find constantly in her work excellent topics for compositions, but a few suggestions as to subjects suited to children of this grade may not come amiss:

1. Tell what month of the year you like best, and why.
2. Tell about some game you can play, in winter but not in summer.
3. How to trim a Christmas tree.
4. Making presents for father and mother.
5. Why you like the snow.
6. Helping mother.
7. A letter to a good friend.
8. The tree and the flower you like best.
9. Why you are glad you learned to read.
10. The happiest day of your vacation.

Often children can express themselves more easily in a letter than in any other form of composition. They can all imagine themselves wanting some day to write a letter, and having something to say, whereas it is a little hard for them to imagine themselves ever voluntarily writing a "composition."

There are a number of things which are closely related to the composition work and which may be taken up in preparation for it or in connection with it. First, stress must be laid again on the beginning of sentences, and on the simplest punctuation points, the period and the question mark. Then the subject of margins may be taken up, and in connection with that, paragraph indenting and the nature of a paragraph. Before a letter is written, the chief points of form in letter-writing should be made clear—the dating, the address of the writer, the salutation, the body, the ending and the signature. A good method to pursue in taking up the subject of letter-writing is to have the pupils copy from the board a letter written in proper form. This letter should have interesting content. The following will serve as an example:

417 Metcalfe Street,
Ottawa, Ontario,
September 14, 1947.

My dear Frances,

It was very good of you to ask me to come

to see you during my vacation. I was afraid my mother would not let me go, but she said "yes" without my having to coax her. My sister Blanche is at home, so that my mother and father will not be lonesome.

I have never been on a farm, and I suppose I'll see many, many things I know nothing about. You will have to promise that your brothers will not laugh at me if I make mistakes or ask foolish questions.

A week will not be so very long to wait, will it? And I am glad, because you know I want to see you and your family and your home.

Your happy friend,
GRACE WALKER.

The use of the hyphen to divide words at the end of a line; the simplest use of the comma, that is, to divide the terms in a series; and the use of capital letters to begin names of persons and places will of necessity have to be taken up in connection with composition work. The use of quotation marks may be called to the attention of the children by having them copy brief conversations from their readers.

Poems. The work on poems begun in the first and second grades is continued in this, but the study here is a little more detailed. The study should never, however, be carried so far that the beauty of the poem is spoiled for the pupils, for after all, poems should be regarded first of all as literature, and only secondarily as a basis for language work. It is impossible to give here enough poems for use throughout the entire third year, but those given here will serve as examples. In addition Wordsworth's *The Kitten and the Falling Leaves*, Helen Hunt Jackson's *Down to Sleep*, Celia Thaxter's *Spring*, and parts of *Hiawatha* may be used.

The Children's Hour

HENRY W. LONGFELLOW

Between the dark and the daylight,
When the night is beginning to lower,
Comes a pause in the day's occupations
That is known as the Children's Hour.

I hear in the chamber above me
The patter of little feet,
The sound of a door that is opened,
And voices soft and sweet.

From my study I see in the lamplight,
Descending the broad hall stair,
Grave Alice, and laughing Allegra,
And Edith with golden hair.

A whisper, and then a silence:
Yet I know by their merry eyes
They are plotting and planning together
To take me by surprise.

A sudden rush from the stairway,
A sudden raid from the hall!
By three doors left unguarded
They enter my castle wall!

They climb up into my turret,
O'er the arms and back of my chair
If I try to escape, they surround me;
They seem to be everywhere.

They almost devour me with kisses,
Their arms about me entwine
Till I think of the Bishop of Bingen
In his Mouse-Tower on the Rhine!

Do you think, O blue-eyed banditti,
Because you have scaled the wall,
Such an old mustache as I am
Is not a match for you all?

I have you fast in my fortress,
And will not let you depart,
But put you down into the dungeon
In the round-tower of my heart.

And there will I keep you forever,
Yes, forever and a day,
Till the walls shall crumble to ruin,
And moulder in dust away!

The Corn Song

JOHN GREENLEAF WHITTIER

Heap high the farmer's wintry hoard!
Heap high the golden corn!
No richer gift has Autumn poured
From out her lavish horn!

Let other lands, exulting, glean
The apple from the pine,
The orange from its glossy green,
The cluster from the vine.

We better love the hardy gift
Our rugged vales bestow,
To cheer us when the storm shall drift
Our harvest-fields with snow.

Through vales of grass and meads of flowers,
Our ploughs their furrows made,
While on the hills the sun and showers
Of changeful April played.

We dropped the seed o'er hill and plain,
Beneath the sun of May,
And frightened from our sprouting grain
The robber crows away.

All through the long, bright days of June
Its leaves grew green and fair,
And waved in hot midsummer's noon
Its soft and yellow hair.

And now, with autumn's moonlit eves,
Its harvest-time has come,
We pluck away the frosted leaves,
And bear the treasure home.

There, richer than the fabled gift
Apollo showered of old,
Fair hands the broken grain shall sift,
And knead its meal of gold.

Let vapid idlers loll in silk
Around their costly board;
Give us the bowl of samp and milk,
By homespun beauty poured!

Where'er the wide old kitchen hearth
Sends up its smoky curls,
Who will not thank the kindly earth,
And bless our farmer girls!

Then shame on all the proud and vain,
Whose folly laughs to scorn
The blessing of our hardy grain,
Our wealth of golden corn!

Let earth withhold her goodly root,
Let mildew blight the rye,
Give to the worm the orchard's fruit,
The wheat-field to the fly:

But let the good old crop adorn
The hills our fathers trod;
Still let us, for his golden corn,
Send up our thanks to God!

A Boy's Song

JAMES HOGG

Where the pools are bright and deep,
Where the great trout lies asleep,
Up the river, and o'er the lea,
That's the way for Billy and me.

Where the blackbird sings the latest,
Where the hawthorn blooms the sweetest,
Where the nestlings chirp and flee,
That's the way for Billy and me.

Where the mowers mow the cleanest,
Where the hay lies thick and greenest,
There to trace the homeward bee,
That's the way for Billy and me.

Where the hazel bank is steepest,
Where the shadow falls the deepest,
Where the clustering nuts fall free,
That's the way for Billy and me.

Winter

ALFRED TENNYSON

The frost is here
And fuel is dear,
And woods are sear,
And fires burn clear,
And frost is here
And has bitten the heel of the going year.

Bite, frost, bite!
You roll away from the light
The blue wood-louse, and the plump dor-
mouse,
And the bees are still'd, and the flies are kill'd,
And you bite far into the heart of the house,
But not into mine.

Bite, frost, bite!
The woods are all the searer,
The fuel is all the dearer,
The fires are all the clearer,
My spring is all the nearer.
You have bitten into the heart of the earth,
But not into mine.

During the month of October take up with the language class Whittier's *Corn Song*. By way of biographical introduction, tell them that Whittier gave very good pictures of his childhood days in some of his own poems; and then read to them *The Barefoot Boy* and parts of *Snow-Bound*. They will get the idea from these that Whittier was a poet of the country rather than of the town, and will realize that in this poem he is talking of something which he really knows about. A series of questions and statements like the following will bring out the points of the poem and help the children to appreciate it before they begin to learn it:

First let us see whether there are any words which we may look up. What does "hoard" mean? "lavish"? Is "lavish" a word which you would use? What does "exulting" mean? "glean"? "hardy"? "rugged"? "meads"? "pluck"? "knead"? "vapid"? "loll"? What is "samp"? Did you ever taste it?

Did you ever hear of a cornucopia, or horn of plenty? The poet imagines Autumn as a beautiful, generous woman, pouring gifts out of such a horn on to the earth. What are some of the gifts that Autumn pours out of her horn of plenty? Lead the children to mention such things as grapes, apples, pumpkins, beautiful bright days, gorgeously colored leaves, nuts. What does the poet think is the best of all these gifts? Does he mention any of the other things that we have talked of?

Is there anything in the second stanza which you do not understand? Did you ever hear of gathering apples from a pine? That sounds strange to us until we see that it is only the poet's way of talking of pine-apples. He says "other lands," because he lived up in New England where such things as pineapples and oranges, which love the hot weather, never grow.

Think of some way in which corn can cheer us "when the storm shall drift our harvest-fields with snow." Did you ever sit before a glowing fire on a winter night and pop popcorn?

Does the poet seem to know when corn is planted and how it is cared for? How do you suppose he found out these things? What do you think he meant by frightening the "robber crows away"? Some of the children will have seen scarecrows, others will not. Let some of those who have seen

them describe them for the benefit of the rest.

Tell briefly of Apollo (an account of the god is found in its alphabetical order in these volumes) and his gift of gold. Ask the pupils whether they have ever seen anything made from corn which is almost as bright and yellow as gold.

Corn, or maize as it is more correctly called, was not known to civilized people until after America was discovered. The Indians had cultivated it for centuries, and it was known as Indian corn. This fact, as well as the fact that even now four-fifths of the corn used in the world is raised in the United States, makes it really a very important national grain, and that is why the poet Whittier can sing of it with so much enthusiasm.

Stories. Children in this grade are able to read easy stories to themselves, and will frequently read stories and books which are so difficult that they can really do little but get an idea here and there. And while it is a good plan to allow them to read, the teacher should still read to them occasionally, as she should, indeed, to the children in the higher grades. Animal stories will still be found prime favorites, and of these few are more attractive than Kipling's *Jungle Book*.

Picture Study. Guido Reni's *Aurora* (see article PAINTING) will show the kind of work with pictures that may be done in this grade.

Fourth Year

Correction of Errors. The drill on this is continued from the third grade, a brief review of the work done in that year forming the introduction to the work. Suggestive sentences on the various possible errors which it is wise to guard against in this grade are here given; in no case, however, are there enough sentences here.

Distinction between GUESS and THINK:

1. I ---- my mother will let me go.
2. I can ---- the riddle.
3. You must ---- until you know the answer; do not try to ----
4. It will do me no good to ---- the answer to that problem.
5. Will you go to the party? I ---- so.

The children will hear the colloquial use of *guess* for *think* so frequently from persons whose opinion they trust, that it is well to explain to them that it is not absolutely wrong, like "I done it" or "I seen it."

Correct use of COME and CAME:

1. I ---- to school every day.
2. I ---- to school yesterday.
3. I have ---- every day this week.
4. I should have ---- if I had known.
5. Who ---- in just now?
6. Where did he ---- from?
7. Have the children all ----?
8. Spring ---- early this year.
9. I wish it would ---- early every year.
10. He ---- to ask us to ---- to his party.

The children by this time are ready for rules of some sort on such subjects as this. These should be, however, of the simplest form, and not technical. That is, do not say "Came is the past tense of come, and come is the perfect tense." To fourth-year children *come* and *came* are two different words. But if they are told that *come* is used after *have* and *had*, it has the effect of a rule without making use of technicalities.

The proper use of LIKE:

1. He looks LIKE you.
2. He looks ---- a sachem.
3. He acted ---- a man.
4. He acted ---- a man should.

The fact may be impressed upon the children, if the examples given are numerous enough, that *like* is never used before a statement; that *as* and *as if* are the correct terms.

The correct use of IN and INTO will not be difficult to impress upon the children.

1. We are IN a room; we go INTO a room.
2. Mary's mother was ---- the kitchen, when Mary ran ---- the room.
3. You will find it ---- the yard.
4. He ran ---- and out. (Show that when no word follows to show the place toward which motion is directed, IN may be used. Of course the distinction between adverb and preposition cannot be made here.)

The correct use of the word GOT may be taken up somewhat as follows, the teacher asking the questions:

"If I say 'I HAVE five dollars' or 'I have GOT five dollars,' is there any difference in my meaning?"

"Which form do you like better?"

"Is it better always to use as many words as possible to express our thought, or as few words?"

Then write on the board a list of sentences, such as the following, directing the children to read them without putting in *got* unless they feel that it is really needed.

1. The United States has ---- a number of large cities.
2. This little boy has ---- no brothers or sisters.
3. He has ---- his money by hard work.
4. Everybody has ---- some work to do.
5. Have you ---- all your work done?

6. I might have ---- that for you while I was in town.

7. I wish I had ---- better marks this week.

After this exercise is finished, have the children, pick out the sentences in which *got* is really necessary, and find some other word which might take its place. For instance, in the third sentence the word *earned* might be used. Show them that such definite, specific words are better than the general word *got*, which is called on to mean so many things.

The use of two negatives is common with children, just as it was common with the language in its early stages. If the fact that "I haven't done *nothing*" means "I have done *something*" can be impressed upon them, they will be interested enough to try to correct this error in their speech. Let them write two sets of sentences, showing the two ways in which a negative thought may be expressed, as—

I haven't any candy; OR I have no candy.
I do ---- want ---- books. I want ---- books.
I am ---- doing anything. I am doing ----
I have ---- seen ---- one. I have seen ---- one.

Compositions. Letter-writing is an excellent form of composition work for children in this grade. Let each pupil write a letter to some other child in the class, folding it correctly and addressing the envelope. Then one pupil may act as postman, collecting the letters and distributing them as directed. Each pupil in turn reads the letter he has received, omitting the name, and criticisms on the construction and language forms are made by the teacher and by the class. At the close of the recitation all letters are handed to the teacher. If no names are read, criticisms can be made freely without causing any child embarrassment.

Topics should still be discussed in class and outlines drawn up before formal compositions are called for. Correctness of form, as to margins, headings, paragraphing, and so forth, should be insisted upon, but the teacher should be careful not to criticize too severely the thought expressed, or the manner in which it is expressed, provided that it is grammatical. The main point is to lead the child to express himself freely, and if he is hurt in the least by a criticism he is likely to draw back and keep his thoughts to himself.

Suitable subjects for compositions in this grade will be found in connection with the daily work, but a number of suggestions may

not come amiss. Such topics as "A Nutting Trip," "Berrying," "An Afternoon in a Hay-field," "Thanksgiving at Our House," "What I Like Best to Do in Winter," "What I Like Best to Do in Summer," "How We Play My Favorite Game," "How Hiawatha Built His Canoe," cannot fail to interest the children. It will not always be possible to have all the children write on the same subject; some of them may never have gone nutting, some may never have seen a hayfield. But the assigning of different topics will merely add interest.

Related Topics. Further work on paragraphing should be done in this grade. If the subject of "Nutting" is chosen for a composition, have a simple outline worked out by the children and put on the board. The outline will take some such form as the following:

1. Who went. When we went. Where we went. Why we went.
2. The trip to the woods.
3. What we did while there.
4. The trip home.

The pupils should then be instructed that each numbered topic in the outline must have a paragraph. This, it should be made clear, is not just for form's sake, but because every paragraph should have one central thought which it is built around, and each central thought should have a paragraph.

The use of the apostrophe to show possession and to show that a letter has been dropped out should be taken up in this year, together with further work on capitalization.

The work on synonyms can be made very interesting to children in this grade. It is well to take as a starting-point some poem, for instance, Bryant's "Planting of the Apple-Tree:"

The Planting of the Apple-Tree

Come, let us plant the apple-tree.
Cleave the tough greensward with the spade;
Wide let its hollow bed be made;
There gently lay the roots, and there
Sift the dark mould with kindly care,
And press it over them tenderly.
As, round the sleeping infant's feet
We softly fold the cradle-sheet;
So plant we the apple-tree.

What plant we in this apple-tree?
Buds, which the breath of summer days
Shall lengthen into leafy sprays;
Boughs where the thrush, with crimson
breast,
Shall haunt and sing and hide her nest;
We plant upon the summer lea
A shadow for the noontide hour,

A shelter from the summer shower,
When we plant the apple-tree.

What plant we in this apple-tree?
Sweets for a hundred flowery springs
To load the May-wind's restless wings,
When, from the orchard-row he pours
Its fragrance through our open doors;

A world of blossom for the bee,
Flowers for the sick girl's silent room,
For the glad infant's sprig of bloom,
We plant with the apple-tree.

As a start, the children may be asked to pick out words which the author used which they never use. They will probably make some such list as "cleave," "greensward," "mould," "infant," "sprays," "haunt," "lea," and perhaps others. First make sure that the pupils understand these words; then let them make a list of words which they would have used instead. It is perhaps a little beyond children of this grade to understand why the poet's words are better than their own, except in cases like "lea," when it is a rhyme word that is in question.

The teacher may then make a list of simpler words from the poem—words which are used by the children every day—and ask them to make a list of words which mean the same. Of course in many instances the children's words will not mean exactly the same, but unless the difference is essential, it should not be pointed out. The word *synonym* need not be used if the teacher prefers; but it will be found that a name will not frighten the children if its meaning has been thoroughly explained to them.

Word-study of a different kind takes up the use of descriptive adjectives, not, however, under that name. The pupils may be directed to find words in the poem chosen for study which describe something. After such lists have been made, the children should use each one to describe something else. Some famous character from history or from literature may then be chosen, and each pupil may make a list of words describing that character.

Poems. One poem suitable for work in this grade has just been given; two others, *The Village Blacksmith* and *Paul Revere's Ride*, will be found in the article READING. Studies of these two poems are there given which should prove very helpful to the teacher. In this grade a number of poems which have been used and learned in the earlier grades may be taken up for further study, for the children are now able to ap-

preciate many points which were beyond them before. In addition, Whittier's *The Pumpkin* and selections from his *Snow-Bound*, Celia Thaxter's *The Sandpiper*, Tennyson's *Owl* and Browning's *Pied Piper of Hamelin* may be used. When a poem contains a story, the pupils may be asked to write out the story for their composition work.

Many a child who is not given exercises in composition work from poems in the fourth or fifth grade finds he is seriously handicapped in higher grades when required to paraphrase prose and poetry in connection with lessons in grammar and composition. For a child to tell in his own words the story a poem contains is to make a simple paraphrase; such an exercise develops the reasoning faculties, tends to thoughtfulness and brings to the surface those bits of human interest contained in the poem which leads one to enjoy better not only that particular poem but makes all poetry more interesting.

Stories. The teacher will find that Kingsley's *Water-Babies* will afford her material for the most of her reading to her pupils throughout this year. There are some parts which the children will not understand and which need not be read to them; but there are editions of the work which give only the story part, omitting the political parallels and allusions.

Work of a slightly different kind may be done with stories in this year. A story should be read by the teacher, and when the pupils are familiar with it a test of their understanding may be made by reviewing it by means of an outline like the following:

I. PRINCIPAL CHARACTERS

- (a) Appearance
- (b) Life
- (c) Home
- (d) Traits of character
- (e) Place in story

II. OTHER CHARACTERS

Part in story

III. INCIDENTS

- (a) Principal happenings
- (b) Where they take place
- (c) Minor happenings

The Ugly Duckling, given in the article **STORY-TELLING**, is an excellent story for use in this way. There are many characters in the story and some of them have very well-marked personalities, so that they may be studied quite like human beings. A little

character sketch of some one of the more important minor characters would make a good composition.

Such a story as *The Ugly Duckling* should be invested with all the realism possible. The children should see that there are types of people who in their relations with their fellow-men are quite likely to act in the same way as did the animals in the story. When such a view is taken the moral the story teaches is driven home with all the greater effect. Probably there is not another story of its length which can be used with better results, from every point of view the teacher and mother can summon to their aid.

Essays. The essays which appear herewith show the sort of composition work which may be expected from pupils in this grade; the two which are presented were photographed from the work of students.

Essay writing usually fails to interest boys; the girls' attitude is more receptive, as a rule. The teacher who can invest work in essays with a new feature, a new element, in which the competitive idea is prominent, and which appeals to the inventive and artistic mind, is assured of a good measure of success. Illustrated essays may be a novelty; pictures, though rude, surely add strength to the language work, and train the hand and eye in expression, just as writing the subject-matter trains the mind in the fine art of composition.

Fifth Year

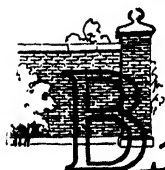
Approach to Grammar. There is still in the fifth year no formal grammar work, but a closer approach to it is made in the language work. The points in language forms to be covered this year are many; not all of them can be covered here, but many will come up in connection with the ones discussed here. A review of *sit* and *set* will lead naturally to *lie* and *lay*.

1. I **LAY** the book on the table.
2. The book **LIES** on the table.
3. The book **LAY** there for a week.
4. He **LAID** the book on the table.
5. Where does that city ---- ?
6. Who will ---- this away for me?
7. I am going to ---- down.
8. She ---- down for half an hour.
9. The ship ---- at anchor.
10. You may ---- the pencil on the desk.
11. The sheep were ---- in the field.
12. He ---- still a long time.

A good method for combining work on right word forms with the study of synonyms

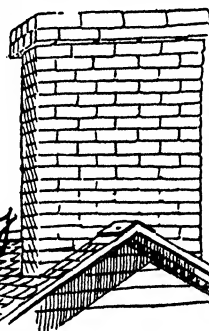


By HARRY SCOTT.



Brick is a sort of artificial stone made by molding a mixture of clay and sand and drying it in the sun or baking or burning in a kiln. The ordinary brick used in building and paving is eight inches long, four inches wide, and two inches thick.

The art of brick making dates from very early times. Sun dried bricks have been found in Egypt, Assyria, Babylonia and many other ancient countries. Many of these bricks contain



inscriptions which are of great historic value, since they constitute the only known record of the people and events of the time in which they were made.



Bricks are extensively used in the foundations and walls of buildings. They are also used for sewers, cisterns, and numerous other purposes.

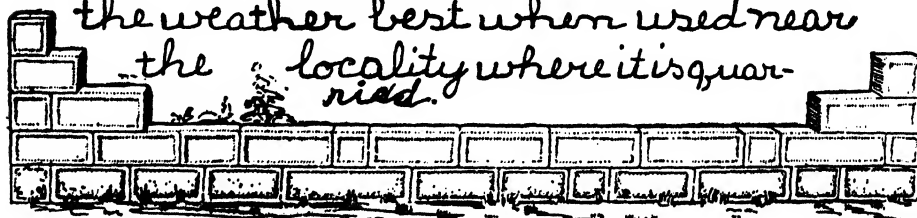
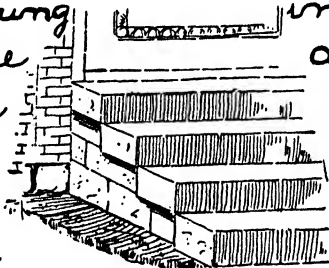
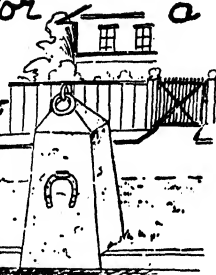
STONE

~BY CHARLIE SMITH~



Stones are of extensive use for a great variety of purposes, such as building, paving, grinding and ornamental purposes. Granite, slate, limestone, marble and sandstones are the building stones in most common use in the United States. There are numerous other stones however suitable for finishing interiors such as serpentine and onyx.

Granite is the strongest and slate the most durable of building stones. Soft sandstones absorb a great deal of water and are not durable for exteriors. Stones containing iron or other substance which the water dissolves frequently becomes discolored. Stone generally withstands the weather best when used near the locality where it is quarried.



is to give sentences such as the following and ask the class to replace the capitalized words with forms of *lay* or *lie*.

1. She RECLINES on a couch.
2. He PLACED it on the floor.
3. Let it REST there.
4. She PUT the baby down.

Raise and *rise* may well be considered at the same time, since their relation is the same. It may be explained to the pupils, without the use of technical terms, that *raise*, *set*, *lay* are always followed by the name of what is *raised* or *set* or *laid*, while the other forms are *not*.

1. The stream ---- in the woods.
2. The stream has ---- several inches.
3. It has ---- the water level.
4. I ---- the window.
5. We have ---- a large sum of money.
6. The sun ---- an hour ago.
7. It has ---- over the mountain top.
8. He ---- his kite.
9. It ---- gaily into the air.
10. If you had ---- before the sun ---- your mother could have ---- no objections to your plan.

Such words as *nice* and *awful* are common words which are misused almost constantly. Review the use of *awful* given on preceding pages, and take up the word *nice*. Every child thinks he knows what the word *nice* means; he uses it frequently. "I have a nice apple. She is a nice girl. We live in a nice house." Make such a list of statements with the word *nice*, and have the pupils replace the word in each instance by another which gives the meaning more exactly. Then explain that *nice* really means *exact*, and have sentences made giving the word its correct meaning. As:

1. It will take NICE work to fit those corners together.
2. What you say will mean more if you are NICE in your choice of words.

Children may be easily interested in slang phrases and provincialisms which are current in their neighborhood, and may be set to work to find expressions which will better give the same meaning. Care is necessary in this work not to take the life out of the children's language and not to give them the idea that written language is something utterly different from spoken language.

Drill on the use of *them* and *those*, together with cautions against such expressions as "that there," "this here," may come in this year.

1. Give me ---- books.
2. I have given ---- to you.
3. All of ---- books belong to ---- children.
4. Who gave ---- books?

Added drill may well be given on the proper forms of the pronouns; in fact, this is work which can with profit be taken up in almost any grade, for many of the most common faults of English come from a misunderstanding of the uses of the pronouns.

1. WHO is that?
2. It is I (or HE, SHE, WE or THEY).
3. WHOM did they see?
4. They saw ME (or HIM, HER, US, or THEM).
5. WHOM did she speak to?
6. She spoke to HIM and ME.
7. WHOM did the teacher scold?
8. She scolded HER and HIM.
9. Will you give it to ME?
10. I will give it to you and HIM.
11. Let you and ME take a walk.
12. Do you want US girls?

There is not so much danger when pupils have reached this stage of their being misled by seeing incorrect forms if it is firmly impressed upon them that the forms are wrong. There is, too, a certain eagerness about correcting errors which adds new interest to the work. Let the pupils tell what is wrong with the following sentences:

1. Whom did you say was here this evening?
2. What did you and her talk about?
3. Whom did you think he was?
4. I can certainly do that better than her.
5. Such a person as him has no right here.
6. He can play better than me.
7. It might have been him.
8. I suppose it was them.
9. Who did you take him for?

The question of the singular and plural of nouns and verbs, with reference to the agreement of subject and predicate, may seem rather elementary to take up in this grade. A pupil of the fifth grade is not very likely to say "We goes," or "They thinks," but the possibilities for mistakes are still practically endless. The danger is particularly strong in sentences where prepositional phrases appear between the subject and the predicate. Let the pupils correct the wrong forms in the following sentences, and in others like them:

1. Either you or I are right.
2. When does your brother and your sister go?
3. The crowing of the roosters tell that it is morning.
4. The use of alcoholic drinks are dangerous.

In connection with the use of the contractions *isn't*, *hasn't*, *doesn't*, and so forth, which may be taken up in this grade, it should be impressed on the pupils that *don't* means *do not*, and should be used only where *do not* is correct. *He don't*, *it don't*, *she don't* are therefore incorrect, for we may not say *he do not*, and so forth. Have the blanks in the following sentences filled with contractions of *not* and some form of the verb *do*:

1. It ---- seems right to do it.
2. A pupil ---- work as hard as a teacher.
3. I ---- care to go.
4. We ---- like some of our studies.
5. Mary ---- come very regularly.
6. You ---- need to pretend to like it.
7. That tree ---- bear many apples.
8. ---- he like his school?

The use of *kind* and *sort* with *these* and *those* is a most persistent error which it will require much drill to overcome. Let the pupils observe the correct forms in the first four sentences that follow, correct the wrong forms in the second four, and fill in the blanks in the last sentences.

1. I like THIS kind of apples.
2. There are many of THAT kind of trees.
3. THAT sort of berries is very expensive.
4. THIS sort of collars is very popular.
5. These kind of people cause much trouble.
6. Those kind of flowers are most beautiful.
7. Do you like these sort of books?
8. Will those sort of games ever be popular?

(Observe that in some of these sentences two corrections are necessary.)

9. I do not care for ---- kind of hats.
10. ---- sort of pencils ---- too hard.
11. ---- kind of electric lights ---- brighter than ---- kind.
12. Do you prefer ---- kind of shoes, or ----?

The distinction between *can* and *may* is easily grasped, but easily forgotten when it comes to a question of every-day use. *Can* expresses power or possibility; *may*, permission or probability. *Could* and *might* differ in the same way. *May* and *might* are seldom if ever incorrectly used for *can* and *could*, but the opposite error is heard almost constantly.

1. ---- I have another piece of pie?
2. She said I ---- play with Mary.
3. No, I ---- not go for a walk today; mother will not let me.
4. You ---- have a drink if you want one.
5. You ---- not leave the room until I tell you to.

These, with review of exercises from former grades and exercises suggested by

errors made by the pupils, will furnish sufficient material for language drill for this grade.

Poems. The poems which are suitable for study in this year are numerous and should appeal to the pupils for at least two reasons—for the stories they tell and for the pictures they present. Some of the poems have both pictures and story; some have only one. A list of poems which may well be used in this grade is as follows:

Barbara Frietchie—Whittier.
In Time's Swing—Lucy Larcom.
The Wreck of the Hesperus—Longfellow.
The Fountain—Lowell.
Song of the Brook—Tennyson.
Lochinvar—Scott.
Sheridan's Ride—Thomas Buchanan Read.
Landing of the Pilgrims—Felicia Hemans.
Christmas Bells—Longfellow.
Lord Ullin's Daughter—Thomas Campbell.
The Arrow and the Song—Longfellow.
Death of Lincoln—Bryant.
Bell of Atri—Longfellow.

The most of these poems will be found in any school library; a few, however, such as the ballad of Campbell's, *Lord Ullin's Daughter*, and Lucy Larcom's *In Time's Swing*, will not be so easy to find, and we give them here. One is a typical story poem, the other a typical picture poem. Longfellow's *Wreck of the Hesperus* is given for comparison with *Lord Ullin's Daughter*.

Lord Ullin's Daughter

A chieftain, to the Highlands bound,
Cries, "Boatman, do not tarry!
And I'll give thee a silver pound,
To row us o'er the ferry."

"Now who be ye, would cross Lochgyle,
This dark and stormy water?"

"O, I'm the chief of Ulva's isle,
And this Lord Ullin's daughter.

"And fast before her father's men
Three days we've fled together,
For should he find us in the glen,
My blood would stain the heather.

"His horsemen hard behind us ride;
Should they our steps discover,
Then who will cheer my bonny bride
When they have slain her lover?"

Out spake the hardy Highland wight,
"Till go, my chief—I'm ready;
It is not for your silver bright,
But for your winsome lady:

"And by my word! the bonny bird
In danger shall not tarry;
So though the waves are raging white,
I'll row you o'er the ferry."

By this the storm grew loud apace,
The water-wraith was shrieking;
And in the scowl of heaven each face
Grew dark as they were speaking.

But still as wilder blew the wind,
And as the night grew drearer,
Adown the glen rode armed men.
Their trampling sounded nearer.

"O haste thee, haste!" the lady cries,
"Though tempests round us gather;
I'll meet the raging of the skies,
But not an angry father."

The boat had left a stormy land,
A stormy sea before her,—
When, oh! too strong for human hand,
The tempest gather'd o'er her.

And still they row'd amidst the roar
Of waters fast prevailing:
Lord Ullin reach'd that fatal shore,
His wrath was changed to wailing.

For sore dismay'd, through storm and shade,
His child he did discover:—
One lovely hand she stretch'd for aid,
And one was round her lover.

"Come back! come back!" he cried in grief,
"Across this stormy water:
And I'll forgive your Highland chief,
My daughter!—oh my daughter!"

'Twas vain: the loud waves lashed the shore,
Return or aid preventing;
The waters wild went o'er his child,
And he was left lamenting.

This poem is written in the style of the old ballads, but it has very few of the strange old forms or the roughness of meter which mark the ballads. Longfellow's *Wreck of the Hesperus* shows more of the ballad characteristics.

Wreck of The Hesperus

It was the schooner Hesperus,
That sailed the wintry sea;
And the skipper had taken his little
daughter
To bear him company.

Blue were her eyes as the fairy-flax,
Her cheeks like the dawn of day,
And her bosom white as the hawthorn buds
That ope in the month of May.

The skipper he stood beside the helm,
His pipe was in his mouth,
And he watched how the veering flaw did
blow
The smoke now West, now South.

Then up and spake an old Sailor,
Had sailed the Spanish Main,
"I pray thee, put into yonder port,
For fear a hurricane.

"Last night the moon had a golden ring,
And tonight no moon we see!"

The skipper he blew a whiff from his pipe,
And a scornful laugh laughed he.

Colder and colder blew the wind,
A gale from the Northeast;
The snow fell hissing in the brine,
And the billows frothed like yeast.

Down came the storm, and smote amain,
The vessel in its strength;
She shuddered and paused, like a frightened
steed
Then leaped her cable's length.

"Come hither! come hither! my little
daughter.
And do not tremble so;
For I can weather the roughest gale,
That ever wind did blow."

He wrapped her warm in his seaman's coat
Against the stinging blast;
He cut a rope from a broken spar,
And bound her to the mast.

"O father! I hear the church-bells ring.
O say, what may it be?"
"'Tis a fog-bell on a rock-bound coast!"—
And he steered for the open sea.

"O father! I hear the sound of guns.
O say, what may it be?"
"Some ship in distress, that cannot live
In such an angry sea!"

"O father! I see a gleaming light.
O say, what may it be?"
But the father answered never a word,
A frozen corpse was he.

Lashed to the helm, all stiff and stark,
With his face turned to the skies,
The lantern gleamed through the gleaming
snow
On his fixed and glassy eyes.

Then the maiden clasped her hands and
prayed
That saved she might be;
And she thought of Christ, who stilled the
wave,
On the lake of Galilee.

And fast through the midnight dark and
drear,
Through the whistling sleet and snow,
Like a sheeted ghost, the vessel swept
Towards the reef of Norman's Woe.

And ever the fitful gusts between
A sound came from the land;
It was the sound of the trampling surf,
On the rocks and the hard sea-sand.

The breakers were right beneath her bows,
She drifted a dreary wreck,
And a whooping billow swept the crew
Like icicles from her deck.

She struck where the white and fleecy
waves
Looked soft as carded wool,

But the cruel rocks, they gored her side
Like the horns of an angry bull.

Her rattling shrouds, all sheathed in ice,
With the masts went by the board;
Like a vessel of glass, she stove and sank,
Ho! ho! the breakers roared!

At daybreak, on the bleak sea-beach,
A fisherman stood aghast,
To see the form of a maiden fair,
Lashed close to a drifting mast.

The salt sea was frozen on her breast,
The salt tears in her eyes;
And he saw her hair, like the brown sea-weed,
On the billows fall and rise.

Such was the wreck of the Hesperus,
In the midnight and the snow!
Christ save us all from a death like this,
On the reef of Norman's Woe!

Have the children read the poem through first to get a general idea of the story and of the swing. Then ask them to point out any strange words or any seeming breaks in the swing. In the very first stanza there is a word which has to be pronounced incorrectly to make it sound right; *daughter* must be accented on the second syllable. In the fourth stanza *sailor* must be treated in the same way, while in the same stanza are found two expressions which are not usual—"up and spake" and "had sailed," with *who* omitted. The children will be able to pick out other instances. Explain to them that Longfellow did not write in this way because he knew no better, and read to them some particularly musical passage from the same poet. Then, in explanation of the irregularities, tell a little about the old ballads: how they grew up among people who knew nothing of poetry, and how they were intended to be set to music. Describe the way they were kept alive, by word of mouth for centuries, and tell of the changes that took place in them. Make your pupils feel, if you can, that what would be defects in more formal poems are really the chief charm of the old ballads.

The Wreck of the Hesperus is primarily a story poem, but are there pictures in it? The second stanza gives a picture of the little daughter; the sixth stanza has the brief picture of the billows that "frothed like yeast;" the thirteenth stanza gives the painful picture of the dead skipper lashed to the helm, with the lantern-light gleaming on him. Let the children find other pictures.

In Time's Swing

Father Time, your footsteps go
Lightly as the falling snow.
In your swing I'm sitting, see:
Push me softly; one, two, three,
Twelve times only. Like a sheet
Spread the snow beneath my feet.
Singing merrily, let me swing
Out of winter into spring.

Swing me out, and swing me in!
Trees are bare, but birds begin
Twittering to the peeping leaves,
On the bough beneath the eaves
Wait,—one lilac bud I saw.
Icy hillsides feel the thaw;
April chased off March today;
Now I catch a glimpse of May.

Oh, the smell of sprouting grass!
In a blur the violets pass.
Whispering from the wildwood come
Mayflower's breath and insect's hum.
Roses carpeting the ground;
Thrushes, orioles, warbling sound:
Swing me low, and swing me high,
To the warm clouds of July.

Slower now, for at my side
White pond lilies open wide.
Underneath the pine's tall spire
Cardinal blossoms burn like fire.
They are gone; the golden-rod
Flashes from the dark green sod.
Crickets in the grass I hear;
Asters light the fading year.

Slower still! October weaves
Rainbows of the forest leaves.
Gentians fringed, like eyes of blue,
Glimmer out of sleety dew.
Meadow-green I sadly miss:
Winds through withered sedges hiss.
Oh, 'tis snowing, swing me fast,
While December shivers past!

Frosty-bearded Father Time,
Stop your footfall on the rime!
Hard you push, your hand is rough;
You have swung me long enough.
"Nay, no stopping," say you? Well,
Some of your best stories tell,
While you swing me—gently do!—
From the Old Year to the New.

This is, first and last, a picture poem. Point out to the children, if they do not get it from their own first reading, that the swinging is only a symbol of the passing year, and then let them direct their attention to the pictures. Have them find first the winter pictures, then the spring pictures, then the summer pictures, then the autumn pictures. Point out to them the fact that each picture is made with a very few words.

There are many birds and flowers mentioned in the poem, some of which are familiar to teachers and mothers, but not so

much is known about others. Great good will result from studying about them, under their regular alphabetical titles.

The children will enjoy making illustrations for this poem. The whole course of the year cannot be accurately covered, but enough pictures can be made to ornament beautifully practically all of the calendars of the months.

"Underneath the pine's tall spire
Cardinal blossoms burn like fire."

"..... the golden-rod
Flashes from the dark green sod."

"Asters light the fading year."

"..... October weaves
Rainbows of the forest leaves.
Gentians fringed, like eyes of blue,
Glimmer out of sleety dew."

These are some of the pictures which will give ideas for illustrations to the pupils.

Composition Work. A part of the composition work of this year may be connected with the work on the poems. Once or twice during the year it will be well to have the pupils give for their compositions the story of some narrative poem which they have studied in this grade or an earlier one. *The Pied Piper of Hamelin* and *The Bell of Atri* are good poems for use in this way. Or, after the study of a narrative poem, it may be well to have the children write a story—either an original story or one from history. Their own original stories, of course, need not be of the same heroic proportions as the tales in the narrative poems.

After some time has been spent on the study of a descriptive poem, let the children write descriptions of some scene with which they are familiar. Impress upon them that they cannot describe a scene or an object clearly until they really know what it looks like, until they have a picture of it with its lights and shadows, its important points and its minor points, distinct in their own minds. *A Garden I Have Seen*, *My Favorite Corner of the Park*, *Our Front Yard* are subjects which it should be possible for the children to handle well.

There is one subject for composition work which rarely fails to interest children. Let each pupil choose an animal or an article which he wishes to be—a rabbit, a fish, a coin, a bottle—and write the experience of that animal or article in the form of an autobiography. These may be fanciful, but

not too much so; the experiences should be those which are possible to the article in question. Andersen's *Constant Tin Soldier*, *The Darning-Needle* and *The Pea Blossom* should be interesting to the children in this connection.

Composition topics which fit the season are useful in varying the monotony. Thus in October some such subject may be assigned as *How My Garden Has Changed*. In December the topic may be *A Christmas Picture*, which affords numerous possibilities—the Christmas tree, the family taking down the stockings, the Christmas dinner table, the group about the fire in the twilight. In February the subject may well be George Washington. His life may be divided into several parts—his youth, his early manhood, his career as a soldier, his presidency, his later life. Each of these parts may be assigned to several pupils, and when all the work is in, a number of lives of Washington may be made by putting the different chapters together.

Related Topics. This year should ground the children still further in the use of capitals, punctuation marks, simple abbreviations, such as those for the different months, and paragraphing. Conversations should be copied from readers or made use of in original compositions until the use of quotation marks is well understood, and practice in letter-writing should not be neglected.

Sixth Year

Correction of Errors. The work of the sixth grade is very closely related to that of the fifth. The drill on the correction of common errors begun in the earlier grades should be continued in this, until the teacher is sure that the pupils understand thoroughly the end to be accomplished. Additional errors on which exercises may be based are given here.

The distinction between *most* and *almost* is one which is frequently overlooked. *Most* means the *greatest quantity*, the *greatest number*; *almost* means *nearly*, and should be used only in places where *nearly* might be used. Place the following sentences on the board and let the children correct those which are wrong:

1. I can go *most* any time you are ready.
2. *Most* of us have been here.
3. *Most* all of us have been there.
4. It is *most* always impossible to find a seat in this train.

5. I shall be most too tired to go.
6. Most everybody likes flowers.

The proper use of *between* and *among* requires thought. Have the blanks in the following sentences filled correctly with one or the other of these two words:

1. She and I divided it ---- us.
2. He had only two apples, but he divided them ---- the three of us.
3. John and Mary and I appealed to father, but he said we must settle it ---- us.
4. There are four beautiful little lakes, and a village nestles ---- them.
5. Father and mother divide the responsibility ---- them.

The statement that *good* is an adjective and *well* is often an adverb cannot be made to pupils of this grade who have not yet been introduced to formal grammar, but the difference in their use may be made clear by numerous illustrations.

1. You are a GOOD boy; you have done your lessons WELL.
2. The bread looks GOOD (meaning, the bread looks as if it were good).
3. The bread is baked WELL.
4. He is never WELL but her health is very GOOD.
5. She is a ---- worker and does everything ----
6. Can you do this ---- ?
7. My work is not done as ---- as yours.
8. Is your health fairly ---- ?
9. If you do this ---- you shall have a ---- rest.

Without and *except* should not be used in the place of *unless*, to introduce a dependent statement. The first four sentences which are given here are incorrect:

1. I shall not go WITHOUT you do.
2. She will not do it EXCEPT she feels like it.
3. EXCEPT the teacher tells you to, you must not do it.
4. They never do anything WITHOUT they are forced to.
5. ---- the sun comes out, it will be ruined.
6. I shall not go with you ---- you wear a hat.
7. There is no use in promising ---- you intend to do it.

Had or *had not* should never be used with *ought*.

1. She OUGHT to go, NOT, She had ought to go.
2. I ought not to do it, NOT, I had not ought to do it.
3. Ought we to speak of it? NOT, Had we ought to speak of it?
4. She thought we ought not to buy the house, NOT, She thought we had not ought to buy the house.

The word *real* is often incorrectly used in place of *very*. Do not say:

1. I am REAL sick.
2. She is a REAL strong girl.
3. We had a REAL good time at your house.
4. If you are REAL sure you do not mind, I will take it.
5. I think I shall like the new teacher REAL well.

In each of these cases the word *very* is the proper word to use.

Word Study. The study of synonyms, begun in earlier grades, may well be continued in this. Such groups of words as *aged, ancient, old, antique; abandon, desert, forsake; admit, confess, acknowledge; at last, at length*, may be discriminated and used in sentences. Very fine distinctions between words should not be drawn with children in this grade.

Very helpful exercises may consist in making lists of adjectives describing certain objects. For example, ten words may be called for which describe a tree, ten which describe a horse, ten which describe a person. These, of course, are not called adjectives in this grade; they are simply descriptive words. The comparison of adjectives, always without using the technical terms, may also be taken up here. After the pupils have given several words describing a tree, as, for instance, *tall, beautiful, sturdy*, call on them to express those qualities in three different degrees and point out the difference between *tall, taller, tallest*, and *beautiful, more beautiful, most beautiful*.

Poems. Any of the poems listed in the fifth-grade work which have not been studied may be used in this year. In addition, the following will be found adapted to pupils of this age:

- How They Brought the Good News from Ghent to Aix—Browning.
- The Bugle Song—Tennyson.
- An Incident of the French Camp—Browning.
- The Fringed Gentian—Bryant.
- The Daffodils—Wordsworth.
- Old Ironsides—Holmes.
- The Leak in the Dyke—Phoebe Cary.

These poems should be studied just as those for the fifth year were studied, though of course with each grade a little truer appreciation may be expected from the children. The teacher may first in each instance give a brief sketch of the life of the poet; this may, in all the cases given for this year, be found in these volumes. Then,

if the poem is a story-poem, it will be of interest to the pupils to learn whether or not the incidents on which the poem is based are true or imaginary. For instance, the two poems of Browning named for study in this year may be contrasted. Let the children read *How They Brought the Good News from Ghent to Aix*, and *An Incident of the French Camp*, and see whether they feel that one is any more *real* than the other. Perhaps the fact that Napoleon is named in the latter poem may make that one seem a little more actual, but for the most part one rings as true as the other. In the case of *An Incident of the French Camp*, however, the historical background, at least, is true; the French did take Ratisbon just in the way Browning describes. As to whether or not the story of the boy, as he tells it, is true, we do not know; but the character of Napoleon, from the glimpse we have of him here, is very true to life. When it comes to the other poem, we find that Browning invented the circumstances entirely; there is no record that there was ever any good news sent from Ghent to Aix. But so real does Browning make the story seem that we almost hold our breath as the galloping ride goes on.

The story of Browning's *Pippa Passes*, if told simply and well, will make a strong appeal to children of this grade, and they will enjoy learning the beautiful little song which Pippa sings as she starts on her day's pleasing:

"The year's at the spring,
And day's at the morn;
Morning's at seven;
The hillside's dew-pearled;
The lark's on the wing;
The snail's on the thorn;
God's in his heaven—
All's right with the world."

Composition Work. This, again, differs in kind very little from the work of the fifth grade. The subjects may be much the same, but of course a little better results may be expected. A list of topics suitable for composition work in this grade is given here:

1. Business letters:
 - (1) To a magazine, inclosing money order for one year's subscription.
 - (2) To a large department store, ordering six or eight articles, and giving directions about delivery.
2. Why I Like My Favorite Book.
3. The Boyhood of Lincoln.
4. The Story of "The Bell of Atri."

5. A Brave Deed I Saw.
6. The Story of a Dollar Bill.
7. The Adventures of a Pin.
8. A January Thaw.
9. A February Blizzard.
10. The Toboggan Slide.
11. How I Ran Away.
12. Having a Tooth Pulled.
13. My Grandma's Kitchen.
14. Our Church.
15. What I See from My Window.
16. The Most Beautiful Place I Know.
17. My First Teacher.

Compositions on such subjects as *Sugar, Coffee, Cotton, Lumber, Apples, Iron, Fisheries, Wheat, Corn* will connect the language work with other studies. The teacher may find it advisable to draw up an outline for such compositions first, that the work may be orderly in form. Material on these subjects may be found in THE AMERICAN EDUCATOR, in regular alphabetical order. See also articles on *Coal, Petroleum, Glass, Steel*, and others of our great industries.

Seventh Year

The Simple Sentence. In the seventh grade formal grammar is taken up. Of course this should be connected as much as possible with the language work of the previous years, but the line between the two is distinct. The greater part of the seventh-year work concerns itself with the sentence, and that subject should be the first thing taken up. Put before the pupils the two groups of words *Flying birds* and *Birds fly* and have them discuss the difference. Lead them to the statement that the former simply *assumes* something about birds, while the latter *asserts* the same fact. Then give them the definition of a declarative sentence—that it is a group of words which asserts something about something else.

Given this definition, it is apparent that there must be two parts to every sentence, no matter how simple; there must be the part that asserts and the part about which something is asserted. Thus in the sample sentence given, the word *fly* asserts something about *birds*. The asserting part of a sentence is called the *predicate*, the part about which something is asserted, the *subject*.

Though the difference between groups of words which assert and groups of words which merely assume is very simple to the teacher, it is by no means always so clear to the pupils. They should have much drill on groups of words such as the following,

distinguishing the sentences from those expressions which only assume:

1. The fishes swim.
2. Swimming plants.
3. The roaring storm.
4. The train runs.
5. The tree falling.
6. Children play.
7. Books are read.
8. The drifts of snow.
9. The green grass.
10. The grass grows.

It will thus be made plain to the pupils that in order to have a sentence, two things are absolutely essential—a subject and a predicate; but it may then be pointed out that comparatively few sentences have this very simple form. Even in the little sentences in the list above, the word *the* is used before the subject more often than not. This modifier of the subject does not, however, make the sentence any less simple; it merely makes the subject less simple. By a combination of the last two groups of words in the list above, *The green grass* and *The grass grows*, it may be shown that the same sentence may both assume and assert something of the subject. *The green grass grows* assumes the greenness and asserts the growth.

Complements. After sufficient drill has been given on the very simplest form of sentences, the point may be made that some predicates do not in themselves contain enough to assert about a subject all that is meant. Thus for instance, if we want to assert about flowers the quality assumed in the expression *beautiful flowers*, it is not enough to say *Flowers are*; we must add to the predicate the word *beautiful*. Give many examples of this use of a word after *is*, *are*, *was*, *were*, etc., to complete the meaning, using adjectives in some and nouns in others. The distinction between these two parts of speech need not be pointed out to the pupils at this stage.

1. Birds are graceful.
2. Swallows are birds.
3. Man is an animal.
4. Men are intelligent.
5. You are good.
6. You are a boy.

The word which is thus used after some form of *to be* is known as the *attribute complement*.

But there are other predicates besides forms of *to be* which need something to complete their asserting power. If we say *The*

man wants, we feel that something is lacking. *What* does the man want? The word which answers that question is the *object*, or *object complement*, of the word *wants*. The object is that which receives the action expressed by the verb. Have the pupils point out objects or object complements in such sentences as these:

1. I ate an apple.
2. He threw the ball.
3. John sang a song.
4. The bird caught a worm.
5. The teacher scolded the pupil.
6. He was reading the book.
7. You like flowers.
8. I broke the glass.

When the pupils have reached this point in their study of the sentence, they may make some such table as the following:

Complete Subject	Predicate	Attribute Complement	Object
John	is	good	
He	has		a dog
The girl	likes		apples

Let them analyze as above and place in their proper compartments the parts of the following sentences, giving, as they do so, their reasons. In analyzing the first sentence, for instance, the pupil will say: "*Cats* is the subject, because something is asserted of them; *catch* is the predicate, because it makes the assertion; *mice* is the object, because it is that which receives the action."

1. Cats catch mice.
2. The boy is tall.
3. The clock was old.
4. A boy was making kites.
5. The kite had a tail.
6. It flew.
7. Gold is heavy.
8. My home was beautiful.
9. The dog was running.
10. The pupil knows the lesson.
11. Cats scratch.
12. Horses eat corn.

Such sentences as the fourth and the ninth will call to the attention of the pupils the fact that a predicate is not always only one word, but the subject of conjugation need not be taken up just at this point.

The Noun. The first part of speech which is given definite treatment is of course the noun. The statement that "a word used to name an object is a noun" is so simple that the children will find no difficulty in understanding this first part of speech; but after

the word *noun* is learned it should be used—"name" and "name word" and such expressions should be dropped. Give plenty of practice in the recognition of nouns, by having the pupils point out all that occur in the following examples:

1. "The breaking waves dashed high
On a stern and rockbound coast;
The woods against a stormy sky
Their giant branches tossed."
2. "Their home was a little hut on the edge
of a little village—a Flemish village a league
from Antwerp, set amidst flat breadths of
pasture and corn-lands, with long lines of
poplars and of alders bending in the breeze
on the edge of the great canal which ran
through it."
3. "I was rich in flowers and trees,
Humming-birds and honey-bees;
For my sport the squirrel played,
Plied the snouted mole his spade;
For my taste the blackberry cone
Purpled over hedge and stone;
Laughed the brook for my delight
Through the day and through the
night."
4. "Up from the meadows, rich with corn,
Clear in the cool September morn,
The clustered spires of Frederick stand,
Green-walled by the hills of Maryland."

Antwerp, in the second selection, and *Frederick* and *Maryland*, in the last, will give opportunity for pointing out the distinction between common and proper nouns.

The Pronoun. The pronoun, the "word used instead of a noun," follows very easily after the work on the noun. *I, you, he, she, it, we, they, who, me, him, her, us, them*, and *whom* may be taken up now, but the possessive forms cannot be understood until after the subject of adjectives has been studied. The nouns common and proper, and the pronouns, may be picked out from the following paragraph, the pronouns being classified from their forms as subject, attribute complement and object.

"In a remote village among some wild hills in the province of Lorraine, there lived a countryman whose name was Jacques d'Arc. He had a daughter, Joan of Arc, who was at this time in her twentieth year. She had been a solitary girl from her childhood; she had often tended sheep and cattle for whole days where no human figure was seen or human voice heard; and she had often knelt, for hours together, in the gloomy, empty, little village chapel, looking up at the altar, and at the dim lamp burning before it, until she fancied that she saw shadowy figures standing there, and even that she heard them speak to

her. The people in that part of France were very ignorant and very superstitious, and they had many ghostly tales to tell about what they had dreamed, and what they saw among the lonely hills when the clouds and mists were resting on them. So they easily believed that Joan saw strange sights, and they whispered among themselves that angels and spirits talked to her."

The Verb. The study of the verb comes next, and while this is more complicated than the work on the noun, there is no reason why it should not be presented as to be perfectly simple. The definition usually given of a verb is that it is "a word which asserts." There is a difficulty in this, however; the word *assert* has been used of the predicate of a sentence, and there is a danger that the pupils will become confused when such verb forms as *giving, given* are introduced, since these forms obviously never of themselves assert anything. The old definition that "a verb is a word that tells what some object is or does" is as simple a starting point as any. The distinction between transitive and intransitive verbs may be easily connected with the study of the object complement, and if that work has been thorough there is no reason why the classification of verbs as transitive and intransitive should give any trouble. For drill, the verbs in the following sentences may be classified in this way:

1. Mary is a good child, but she has a quick temper.
 2. The cat has sharp claws.
 3. The dog runs swiftly.
 4. The river carries ships to sea.
 5. I see four pine trees from my window.
 6. The girl sang well.
 7. She sang a beautiful song.
- (These last two sentences may be used to show how the same verb may be both transitive and intransitive.)
8. I stood on the bridge.
 9. You own a horse, do you not?
 10. The sun shines.
 11. The rain freshens the flowers
 12. The flowers grow.
 13. I like dogs and horses; you like cats.
 14. I walked slowly.

Inflection. The word *inflection* is not too difficult to introduce to seventh-grade pupils, but it should be introduced after the fact of inflection, not before. Call attention first to the fact that verbs do something in sentences besides asserting. When we say "I eat an apple," "I ate an apple," the verb tells us that there is a difference in time in the two actions; when we say "I go to school,"

"I *may go* to school," the verb tells us that in one case the speaker is certain, in the other doubtful. Different forms of the verb are necessary if it is to tell us all of these things when used in a sentence. Write on the board *give, gives, gave, giving, given* and ask the pupils how many words you have written; then explain that these five are really only five different forms of the one word *give*. The use of copulas, *is, has, may*, etc., may be introduced here, by showing that even the five forms of the verb *give* cannot always tell us all that a verb needs to tell.

Point out, too, that some forms of the verb can assert, while others have not that power; "I *give*," "you *gave*," "he *gives*" assert, while *giving* and *given* do not, however they may be used. Such forms of the verbs as do not assert are called *verbals*. Give a brief drill on verbals, letting the pupils pick them out from the following list:

have, has, having, had.
go, goes, going, went, gone.
break, breaks, breaking, broke, broken.
buy, buys, buying, bought.
bring, brings, bringing, brought.
paint, paints, painting, painted.

The study of verbals leads up to the *verb phrase*—the combination of one or more verbals with a verb. By combining the forms picked out as verbals above with copulas, the verbals may be used in making assertions. Perhaps the simplest definition that can be given of a verb phrase is that it is "a group of words used like a verb of one word." Verb phrases may be pointed out in the following sentences:

1. The sun has risen.
2. The moon rose.
3. The children were playing.
4. He has learned his lessons.
5. They did their work.
6. We earned the money.
7. The boys will run races at the picnic.
8. I shall go tomorrow.
9. She lost her book.
10. The cat is watching for a mouse.
11. The girls were having a good time.
12. We had much trouble before we found it.

Have each of the above sentences rewritten, directing the pupils to employ different forms of the same verbs, so that where simple verbs are now used there may be a verb phrase, and where there are now verb phrases, verbs of one word may be used. The first sentence would thus be written:

The sun ROSE, or
The sun RISES.

It is not necessary that the time expressed be the same.

The Adjective. The adjective, with its uses as direct modifier and as attribute, and the adverb, modifying verb, adjective or adverb, should next be introduced, and from the study of these two parts of speech the transition be made to adjectives and adverb phrases and clauses. This brings in the study of prepositions, conjunctions and relative pronouns. In connection with the complex sentences, or those containing dependent clauses, may be introduced the compound sentence, with its two or more coordinate parts. A list of sentences is given here, which may be used for drill in work with all of these topics.

(a) Pick out the adjectives in the following sentences and tell whether they are direct modifiers or attributes:

1. The long day is over.
2. The blue flowers have faded.
3. Over the brown fields the pale autumn sun shone.
4. The water is cold.
5. The days in summer are long and sunny.
6. On the chill days of November we long for the bright, fresh days of spring.
7. The red leaves of the vine are beautiful against the dark, shaggy trunk of the old tree.
8. Far above us, graceful birds circled in the blue sky.
9. Do you think these red flowers will be pretty in this green vase?
10. The soft, fleecy snow has covered up the ugly, bare ground.
11. She is well, but her sister is ill.
12. I have been very happy all day.

(b) Pick out the adverbs in the following sentences and tell whether they express place, direction, manner, degree, time when, or duration of time. Also point out the word which each adverb modifies:

1. She plays well.
2. She plays very well.
3. I am extremely sorry that you cannot go.
4. The frightened animal fled still more rapidly.
5. The Indian vanished swiftly in the forest.
6. Put it there.
7. The crayfish scuttled backward.
8. He seems to do everything easily.
9. If you do not do it now, you will never do it.
10. They worked long and hard.
11. The army moved forward as one man.
12. He searched eagerly for the house where he had lived so happily.
13. A very tall man rose and said emphatically, "We are wasting the swiftly passing time in utterly useless debate."

(c) Pick out the prepositions in the following sentences, and tell what each prepositional phrase modifies:

1. Pansies grow in the garden, but their violet cousins grow in the open fields.
2. Through the window came a snowball, which broke against the wall.
3. It was thrown by a small boy who was hiding behind a bush in the garden.
4. Above the tree tops floated a gorgeous kite.
5. Scores of people were rushing toward the spot, asking wildly about the accident.
6. The dog ran around the house and under the barn.
7. It is on the table, just inside the door.
8. Between you and me, I do not believe it.
9. Such talk is out of place among friends.
10. A cottage in the woods is all I desire.
11. This letter from my mother has news for all of us.
12. Beyond the park paling is the unbroken forest.

(d) Tell whether the following sentences are complex or compound, and pick out the clauses. In the case of complex sentences, tell whether the dependent clauses are adjective or adverb clauses, and whether they are introduced by conjunctions or by relative pronouns:

15. I prefer to read but I will play tennis if you wish.
16. If you hear from him before I do, send me word.
17. The flowers which I bought yesterday are still fresh, and I think I shall wear them when I go out this evening.
18. She is the girl whom we all love.
19. "The world goes up and the world goes down."
20. He was pardoned, though he was guilty.
21. He was pardoned but he was guilty.
22. I cannot go until my work is done.
23. "Knowledge comes, but wisdom lingers."
24. "You never miss the water till the well runs dry."
25. "Blessed is the man that walketh not in the counsel of the ungodly."
26. Bring me the book which you will find on the table.

No attempt has been made here to instruct the teacher as to just how each of these subjects should be introduced; the intention has been rather to furnish a fund of illustrative material for the needed drill.

For the work on sentence analysis, any or all of the above sentences may be used. A table similar to that used for the simple sentences at the beginning of the year's work may be made, and the various parts of the sentences may be classified under it:

Subject Modifiers			Subject	Predicate	Predicate Modifiers			Object	Attribute
Word	Phrase	Clause			Word	Phrase	Clause		
A gorgeous This The	from my mother who sent the presents		kite letter man	floated has is		above the tree tops for all of us		news	rich

1. She came while I was there.
2. They went, though they should have remained at home.
3. John and Mary walked rapidly to the top of the hill, but they were afraid to go farther.
4. The man who sent the presents is rich.
5. Birds sing and flowers bloom.
6. The home which I like best of all is too expensive.
7. She ran toward the box that contained the gold.
8. Since I have been here, I have seen two bears.
9. Because his father would not let him go, he ran away.
10. You had better stay at home, for you could never stand the journey.
11. The wind is not blowing, nor does it rain as it did an hour ago.
12. This is the man who wrote the letter.
13. We found the house which we were seeking.
14. The boy whom the teacher scolded yesterday did better today.

Composition Work. The grammar work should not be emphasized to the exclusion of composition work in this grade. In fact, the composition work may be made a real help in the grammar, for illustrations of the principles being introduced may constantly be found in the compositions, and the pupils may be more easily interested in a form if they know they make use of it themselves. The topics for composition work in this class should be varied from month to month. Here follows a list of suggested composition topics:

1. Why I Should Not Like to Live in ---- (some country being studied in geography).
2. The Woods in Autumn.
3. Our Autumn Out-of-door Games.
4. A Newsboy's Christmas, or, A Selfish Girl's Christmas.
5. The Story of Barbara Frietchie (as it

might be told to a child of ten).

6. Why I Should Like to Have Lived in the Time of Lincoln (or Washington).

7. A Windy March Day, or,
The First Real Spring Day.

8. What I Have Learned in Grammar This Year.

Poems. Much of the work on poems will come with the reading, but there should be occasional exercises in the grammar class. This does not mean that just the grammatical features are to be taken up, for while it may be very beneficial to point out ways in which the poetical expression differs from the prose, a poem may well be spoiled by too long dwelling on such points. But the re-telling of stories, the reproduction of descriptions contained in poems, and the putting into words of the impression produced by a part or the whole will make helpful exercises. The following poems are suitable for use in this grade:

The Building of the Ship—Longfellow.

A Robin Hood Ballad.

The Courtin'—Lowell.

The Song of the Brook—Tennyson.

The Diverting History of John Gilpin—Cowper.

The Children's Hour—Longfellow.

Rhœcus—Lowell.

The Hot Season—Holmes.

The Old Clock on the Stairs—Longfellow.

As it may not always be possible to find a *Robin Hood* ballad, we give here the one dealing with *Robin Hood and the Stranger*.

Robin Hood and the Stranger

Come listen awhile, you gentlemen all,
With a hey down, down, a down, down,
That are this bower within,
For a story of gallant bold Robin Hood,
I purpose now to begin.

"What time of day?" quoth Robin Hood then;
Quoth Little John, "'Tis in the prime."

"Why then we will to the green-wood gang,
For we have no vittles to dine."

As Robin Hood walkt the forest along,
It was in the mid of the day,
There he was met of a deft young man
As ever walkt on the way.

His doublet was of silk, he said,
His stockings like scarlet shone,
As he walkt on along the way,
To Robin Hood then unknown.

A herd of deer was in the bend,
All feeding before his face;
"Now the best of you Ile have to my dinner,
And that in a little space."

Now the stranger he made no mickle ado,
But he bends a right good bow,

And the best buck in the herd he slew,
Forty good yards him free.

"Well shot, well shot," quod Robin Hood then,
"That shot it was shot in time;
And if thou wilt accept of the place,
Thou shalt be a bold yeoman of mine."

"Go play the chiven," the stranger said;
"Make haste and quickly go,
Or with my fist, be sure of this,
Ile give thee buffets sto'."

"Thou had'st not best buffet me," quod Robin Hood,
"For though I seem forlorn,
Yet I can have those that will take my part,
If I but blow my horn."

"Thou wast not best wind thy horn," the stranger said,
"Beest thou never so much in haste,
For I can draw out a good broad sword,
And quickly cut the blast."

Then Robin Hood bent a very good bow
To shoot, and that he would fain;
The stranger he bent a very good bow,
To shoot at bold Robin again.

"O hold thy hand, hold thy hand," quod Robin Hood,
"To shoot it would be in vain;
For if we should shoot the one at the other,
The one of us may be slain."

"But let's take our swords and our broad bucklers,
And gang under yonder tree."
"As I hope to be sav'd," the stranger said,
"One foot I will not flee."

Then Robin lent the stranger a blow
'Most scard him out of his wit:
"Thou never felt blow," the stranger he said,
"Thou shalt be better quit."

The stranger he drew out a good broad sword,
And hit Robin on the crown,
That from every haire of bold Robin's head,
The blood ran trickling down.

"God a mercy, good fellow!" quod Robin Hood then,
"And for this that thou hast done,
Tell me, good fellow, what thou art,
Tell me where thou doest wone."

The stranger then answered bold Robin Hood,
"Ile tell thee where I did dwell;
In Maxwel town I was bred and born,
My name is young Gamwel."

"For killing of my own father's steward,
I am forc'd to this English wood,
And for to seek an uncle of mine;
Some call him Robin Hood."

"But art thou a cousin of Robin Hood then?
The sooner we should have done."

"As I hope to be sav'd," the stranger then said,

"I am his own sister's son."

But lord! what kissing and courting was there,

When these two cousins did greet!

And they went all that summer's day,
And Little John did (not) meet.

But when they met with Little John,

He unto them did say,

"O master, pray where have you been,
You have tarried so long away?"

"I met with a stranger," quod Robin Hood,

"Full sore he has beaten me."

"Then Ile have a bout with him," quod Little John,

"And try if he can beat me."

"Oh no, oh no," quod Robin Hood then,

"Little John, it may not be so;

For he is my own dear sister's son,
And cousins I have no mo'.

"But he shall be a bold yeoman of mine,

My chief man next to thee;

And I Robin Hood, and thou Little John,
And Scallock he shall be."

There are a number of expressions in this old poem which will not be clear to a modern reader. Explain to the pupils the nature of the old ballads, as given in the fifth-year work, and tell them the meanings of the following words:

"Gang" is a Scotch word meaning go; "deft" means carefully dressed, neat; "Ile" is an old spelling for I'll; "Mickle adoe" means much ado; "froes" is from—the strange order of this line is due to the ballad form. No one can be just sure what "chiven" means, but it is probably an old word for coward; "buffets sto'" means store of buffets; "quod" is an old form for quoth. "Cousin" formerly meant almost any relative; here it means nephew. "Mo'" is a shortened form of more, as "sto'" is of store, above.

Eighth Year

Introduction. The eighth-grade work in grammar is a continuation of the seventh-grade work in an unusually real and close sense. There is little that is now introduced in the eighth year, but all of the subjects studied in the seventh year are expanded and systematized.

Nouns. The definition of this part of speech, together with many facts about it, was learned in the seventh grade. There yet remains, however, much systematic information about the noun which the pupils have not yet had given to them. The division into common and proper nouns has been touched upon, but it may be emphasized here, together

with the further division of common nouns into classes. Lists of *collective* nouns, names which denote a group, and of *abstract* nouns, words which name qualities, conditions or actions, may be made. Have collective and abstract nouns pointed out in the following sentences:

1. A crowd gathered rapidly.
2. Truth crushed to earth will rise again.
3. Praise the Lord for his goodness.
4. I find much pleasure in talking with him.
5. The row of houses looked bright and fresh in the sunlight.
6. My memory is not good.
7. Honesty is the best policy.
8. She had much trouble with her children.
9. Death comes to all.
10. The whole tribe was in arms.
11. A great herd of cattle was frightened by the storm.
12. His weight has increased.
13. One needs a good imagination to call up during the winter a picture of a summer day, with groups of children playing on the lawn, flocks of birds hovering over the trees, and the wonderful summer "feel" in the air.

Let the pupils make a list of all the ways they have studied in which nouns may be used; as subject, as object, as attribute, as part of a prepositional phrase. Add to these the uses as possessive modifier, as indirect object, independently in address, and in apposition. In the following sentences, the capitalized words illustrate the various uses in the order given above:

1. The BIRD flies.
2. He threw a STONE.
3. John is a good BOY.
4. I found the book on the TABLE.
5. The BOY'S hat blew off.
6. The teacher sent his MOTHER a note.
7. JOHN, come here this instant!
8. Mr. Smith, an upright, intelligent MAN, was elected.

After the pupils thoroughly understand the use of each noun in the above sentences, they may tell the way in which each one in the following sentences is used:

1. Child, did you not hear me call you?
2. He is a strong man, in mind as well as in body.
3. Did you see the mountains while you were away?
4. Rover, the most faithful dog I ever knew, is dead.
5. Mother, may I go out to swim?
6. He bought books, books, nothing but books.
7. The prisoner is guilty; there is no doubt about that fact.
8. The violet is a dainty flower.
9. The violet is one of the daintiest of flowers.

10. Father, John says that in the woods he saw a squirrel, a tiny fellow, steal a bigger squirrel's horde of nuts.

11. Give John that apple.

12. They never offer a visitor a chair.

The regular formal inflection of nouns follows this. Explain first the reason for inflection of nouns—to indicate differences in number and in case—and tell the pupils that inflection in English is very much simpler than in any of the ancient languages or many of the modern. The matter of number will give them little trouble, for they have been used to considering singular and plural forms of nouns ever since they began language study. But in dealing with the question of *case*, be sure that all understand that while there are only two case *forms* of a noun (as *boy*, *boy's*) there are three *cases*, one form doing duty for nominative and objective. Let them now turn back to the sentences in seventh-year work and classify each noun according to number and case. A little table may be worked out, dividing up the various uses of nouns which they have been studying according to the cases which they demand:

NOMINATIVE CASE	POSSESSIVE (OR GENITIVE) CASE	OBJECTIVE (OR ACCUSATIVE) CASE
subject attribute independently in address in apposition with another noun in nominative.	possessive modifier in apposition with another noun in possessive	object part of prepositional phrase indirect object in apposition with another noun in objective

Of course rules for the formation of plurals and possessives, together with a discussion of gender in English, form a part of this work on inflection.

Pronouns. The classes of pronouns, personal, relative, interrogative, adjective, will require considerable drill, though if each step is connected as closely as possible with the work which has previously been done on the noun, the subject will be much simplified. When the subject of inflection is reached, call the attention of the pupils to the fact that certain of the pronouns have fuller inflections than have the nouns, possessing, indeed, a distinct form for each case of each number.

	SINGULAR	PLURAL
Nominative:	I	we
Possessive:	my, mine	our, ours
Objective:	me	us

An interesting exercise will consist in letting the pupils try to use each kind of pro-

noun in as many as possible of the constructions in which nouns are used. Take, for example, the third personal pronoun, *he* *his*, *him*. It may be used:

(a) As subject: HE crossed the river.

(b) As object: John saw HIM yesterday.

(c) As attribute: Yes, it was HE who did it.

(d) As object of preposition: In HIM I find my ideal.

(e) As possessive modifier: He snatched HIS hat.

(f) As indirect objective: The teacher gave HIM the prize.

(g) In apposition: The stranger, HE in the fur coat, is from Alaska.

This work with the personal pronouns is comparatively easy; that on the relative will be a little more difficult. The following will serve as examples of what may be done:

(a) As subject: The man WHO bought our house is here.

(b) As object: There is one boy WHOM we all like.

(c) As object of preposition: There is the woman to WHOM I gave the message.

(d) As possessive modifier: The boy WHOSE hat was knocked off was very angry.

Although all of the pupils may have had drill on the correct forms of pronouns, there is no danger that they will be given too much practice. Let the blanks in the following sentences be filled in with the proper forms of the pronouns:

1. The man -- you met is my father.
2. I shall give this to the person to ---- it belongs.
3. If you and ---- (3rd person) will go, I shall go too.
4. She asked her and ---- (1st person) to come to the house after school.
5. ---- do you suppose I met today?
6. ---- do you think he meant?
7. They demanded to know ---- I was waiting for.
8. Frank, John and ---- (1st person) will do it for you.
9. Was that John in the first seat? No, it was not ----.
10. I do not think that it could have been ---- (3rd person).
11. He declared that it was not ---- (3rd person) who broke the window.

12. The teacher scolded Mary and ---- (1st person) for being late.

13. Jane is crying because some bad boys hit Mary and ---- (3rd person) with snow-balls.

14. ---- that honor me, I will honor.

Adjectives. The work on adjectives includes a review of their various uses, as studied in the seventh grade, and a drill on the comparison of adjectives.

Verbs. The subject of verbs will need much time, for conjugation is not a simple subject, and nothing but continued drill will make the pupils familiar with it. The fact that each number, each person, each mode and sometimes each tense does not have a distinct form makes the memorizing of conjugations easier, but makes parsing more difficult, because there are not always "tags" to help the pupil recognize each form. Another source of error which must be cleared away is the idea that the name of the tense always tells the time of the action. Thus in the sentence "He leaves town next week," the verb form is present, but the time is plainly future; in the sentence "Even though he saw me, he would not speak to me," the subjunctive *saw* is past in form, but present or future in meaning.

The difference between weak, or regular, verbs, which form their past tense and past participle by adding *d* or *ed*, and strong, or irregular, verbs, which make those forms by changing the vowel of the root, should be emphasized.

Regular: play, played, playing, played.

Irregular: write, wrote, writing, written.

There are certain verbs which resemble each other in form whose past tenses are likely to give trouble. There should be, therefore, special drill on such verbs as

sit	sat	sat
set	set	set
lie	lay	lain
lay	laid	laid
rise	rose	risen
raise	raised	raised

It is impossible to give here complete directions for the method of presenting all phases of this subject of the verb; any good textbook, however will, with the aid of the teacher, make the subject clear.

Parsing. The parsing of sentences is a very important part of this year's work. It forms in fact, in itself a complete review of all that has been learned about sentences and about the parts of speech. Too much emphasis cannot be placed on this subject. The

exact form of words in which the parsing is done may vary, but each teacher should have a method which should be rather rigidly adhered to. In parsing a noun, the following facts regarding it should be given:

1. The class to which it belongs.
2. Its number and gender.
3. Its case.
4. The reason for its case—that is, its construction in the sentence.

In parsing a verb or verb phrase the following facts should be given:

1. Class—whether transitive or intransitive, regular or irregular.
2. Principal parts.
3. The voice, mode, tense.
4. The person and number, and the subject with which it agrees.

A personal or relative pronoun is parsed as a noun is parsed, except that there is no distinction between common and proper, while the person and the antecedent if there is one, must be mentioned.

In parsing an adjective give:

1. The class to which it belongs.
2. The degree.
3. Its use.

In parsing an adverb, tell:

1. The kind of adverb, whether of time, place, manner, etc.
2. The verb, adjective or adverb which it modifies.

To parse a preposition, state its object and the relation which the phrase bears to some other word in the sentence; to parse a conjunction, tell whether it is coördinate or subordinate, what elements of the sentence it connects, and what its special significance is.

The complete parsing of a sentence should proceed about as follows:

"His house, which was very old, burned quickly."

"His" is a third personal pronoun, singular number, masculine gender and possessive case. It is a possessive modifier of "house."

"House" is a common noun. It is in the singular number, neuter gender and nominative case. It is the subject of the sentence.

"Which" is a relative pronoun, singular number, neuter gender and nominative case. It is the subject of the clause "which was very old." Its antecedent is "house."

"Was" is an irregular copulative verb. The principal parts are IS, WAS, BEING, BEEN. It is in the indicative mode and the past tense. It is third person, singular number, agreeing with "which," the subject of the clause.

"Very" is an adverb of degree, modifying the adjective "old."

"Old" is a descriptive adjective. It is in the positive degree, and is used attributively, after "was."

"Burned" is a regular, intransitive verb. The principal parts are BURN, BURNED, BURNING, BURNED. It is in the active voice, indicative mode and past tense. It is in the third person and singular number, agreeing with "house," the subject of the sentence.

"Quickly" is an adverb of manner, modifying the verb "burned."

Composition Work. The same general directions apply to composition work in this grade as were given for the seventh grade.

Poems. Any or all of the following poems will be good material for study in this grade:

The Gift of Tritemus—Whittier.

Herve Riel—Browning.

To a Mountain Daisy—Burns.

The Chambered Nautilus—Holmes.

The Burial of Sir John Moore—Charles Wolfe.

O Captain! My Captain!—Whitman.

The Last Leaf—Holmes.

Abou Ben Adhem—Leigh Hunt.

LANGUAGES OF THE WORLD. It is estimated that there are at least 5,000 dif-

LANGUAGE	PLACES WHERE SPOKEN	NUMBER USING THEM
Basque	Southern part of France; Northern Spain	440,000
Bulgarian ..	Bulgaria	10,000,000
Czech	There are 6,500,000 Czechs in Bohemia, Moravia and Silesia, 125,000 in Germany, 65,000 in Russia, and 500,000 in the United States. Besides these there are 2,500,000 Slovaks living in Northeastern Hungary, who speak practically the same language as the Czechs. In 1918 these peoples set up a Czechoslovak republic with Prague, Bohemia, as the capital.....	
Chinese ...	China	400,000,000 (This includes all dialects)
Danish	Denmark and Northern Schleswig. Danish is also spoken by the educated classes in Norway.....	3,500,000
Dutch	Netherlands. A dialectic form is spoken by the Boers of South Africa	8,000,000
Egyptian ...	Egypt	10,500,000
English	The British Isles, Canada, Australia, New Zealand and officially in all the British colonies; the United States.....	180,000,000 (or more)
Flemish	Northern Belgium	3,500,000
French	France and its dependencies; French Canada; part of Switzerland. Walloon, a French dialect, is spoken in Southern Belgium....	52,000,000 (or more)
German	Germany, Luxemburg, Northern Switzerland, German Austria. There are also German-speaking people in Russia, the United States, Brazil and elsewhere	80,000,000
Greek	Greece, Asia Minor, Cyprus, Crete.....	9,000,000
Hindustani ..	Northern India	100,000,000
Italian	Italy and its islands; parts of Switzerland, France and the former Austria-Hungarian Monarchy	42,000,000
Japanese	Japan	80,000,000
Norwegian ...	Norway	3,000,000
Persian	Persia	9,500,000
Polish	The regions in Central Europe which formerly comprised the kingdom of Poland. Also spoken in the United States.....	16,000,000
Portuguese ..	Portugal, Brazil, dependencies of Portugal	26,200,000
Rumanian ..	Rumania; parts of former Austria-Hungary, Russia, Serbia	12,000,000
Russian	Greece	
Serbo-Croatian ..	Regions comprising old Russian Empire; by Ruthenians of Galicia, Bukowina and Hungary.....	114,000,000
Spanish	The Kingdom of Jugo-Slavia, combining the former Serbia, Montenegro, Croatia, Slavonia, Bosnia, and Herzegovina.....	8,000,000
Swedish	Spain, Mexico, Central America, all Countries of South America (except Brazil), Philippines, West Indies.....	50,000,000
	Sweden	5,500,000

The following list of topics is meant to be suggestive merely; the teacher can relate the subjects with the work in other classes:

1. An original story on "The Last Day of Johnny's Vacation."
2. A letter from Norway, telling of the midnight sun.
3. Indian Summer.
4. An Original Fable.
5. A Visit to a Haunted House.
6. What I Shall Have in My Garden.
7. My Kitten, or, My Dog.
8. A letter to some author whose stories or poems you have read.
9. A Moonlight Evening.

ferent languages and dialects spoken throughout the world, ranging from the undeveloped systems of the most primitive races to the elaborate languages of the great civilized peoples, with their formal grammar and voluminous literatures. The most important languages, however those that are used by peoples or nations which have to-day a vital part in the making of history, number fewer than twenty-five, if we disregard dialects belonging to the same tongues. In respect to the number of persons using a particular tongue, with its various dialects, Chinese has

first place, for it is spoken by about 400,000,000. English is used by at least 180,000,000, ranking next to Chinese among all languages. English is preëminently the commercial language of the world, and is likely to develop considerably in this respect because of the part played by the great English-speaking nations in the World War.

The preceding table gives the world's chief languages, the number using them, and the places spoken. See **PHILOLOGY**.

LANIER, *la neer'*, SIDNEY (1842-1881), an American poet and musician born at Macon, Ga. After graduating from Oglethorpe College, he taught one year and then entered the Confederate army. He served through the war, suffering so much from exposure and imprisonment that he was an invalid the rest of his life. After the war he supported himself for a time by teaching, serving as clerk in a shop and practicing law with his father in Macon. He devoted all his spare time to literature and music, and after 1873, his entire time. For several years he played the flute as a member of symphony orchestras. In 1876 he was asked to write a cantata for the Centennial Exposition; in 1879 he became a lecturer in English at Johns Hopkins University, where he delivered the lectures afterwards published as *The Science of English Verse* and *The English Novel*. Lanier's poems, the best of which are *Corn*, *The Marshes of Glynn* and *Song of the Chattahoochee*, are remarkable for exquisite melody. He was one of the foremost poets of his generation and his fame is growing steadily.

LANDSOWNE, HENRY CHARLES KEITH PETTY-FITZMAURICE, Marquis of (1845-1927), a British statesman, educated at Eton and Balliol College, Oxford. When a young man he entered upon a political career as a Liberal. Between 1868 and 1883 he held successively the offices of Lord of the Treasury, Under-secretary of War and Under-secretary for India. In 1883 he was appointed Governor-General of Canada, to succeed the Marquis of Lorne, and from 1888 to 1893 was Viceroy of India. In 1895 he became Secretary of War, and in 1900 Secretary of State for Foreign Affairs.

After 1905 Lord Lansdowne became leader of the Unionist opposition in the House of Lords. He led the opposition during the discussion of the Lloyd-George budget in 1909, and his attitude in that debate showed

that his sympathies were with the Conservatives rather than with the Liberals. In May, 1915, he entered the coalition Ministry headed by Premier Asquith, and on the accession of Lloyd George to the Premiership he retired to private life. Lord Lansdowne aroused spirited discussions in allied countries by issuing a declaration in November, 1917, in which he urged the allies to restate their war aims and prepare the way for peace negotiations. See **WORLD WAR**. (For portrait, see article **GOVERNOR-GENERAL**.)

LANSING, MICH., the capital of the state and the county seat of Ingham County, ninety miles northwest of Detroit, at the junction of the Grand and Cedar rivers, on the Grand Trunk, the Michigan Central, and the Pere Marquette railroads. There is also the Capital City airport. The city was settled in 1837, and was laid out as the capital ten years later, when the place was still a comparative wilderness; the town then had but one family.

The state capitol is a fine structure, located in a twelve-acre park near the center of the city. The state school for the blind and the state industrial school for boys are located here and the state agricultural college, with its farm of 680 acres, is near the city. Other important structures are a city hall, a public library, a hospital and a Federal building. The Grand River has a fall of eighteen feet and furnishes good water power; there are over 200 manufacturing enterprises. The manufactures include flour, stoves, automobiles, automobile bodies, auto trucks, tractors, Diesel engines, furniture, cut glass, agricultural implements, artificial stone, machinery, condensed milk, beet sugar and knit goods. Population, 1930, 78,397.

LANTERN FISH, a name applied to certain deep-sea fishes, some of which are of remarkably grotesque appearance. They are called lantern fish because they possess phosphorescent organs which give the light necessary for them to see in the dark ocean abysses in which they live.

LANTERN FLY, so called on account of its long proboscis, which is said to be phosphorescent and luminous. It belongs to a large family, numbering among its members some of the biggest insects known. Many of them resemble butterflies and moths; some are brilliantly colored. All are vegetarians, and some are destructive to certain crops. In China the wax secreted by these insects is used in making candles.

LAOCOON, *la ok'o on*. See SCULPTURE, subhead *Laocoon*.

LA PAZ, *lah pahz'*, BOLIVIA, the metropolis and virtual capital of the republic and capital of the department of Bolivia, is magnificently situated on a great plateau at an altitude of more than 12,000 feet above the sea. The city lies thirty miles southeast of Lake Titicaca, and is surrounded by lofty mountains, being dominated by the towering Illimani. It occupies a deep U-shaped canyon, whose steep sides completely hide the place from the observer until he is at the very edge of the abyss. Travelers express in glowing terms their delight in the panorama which spreads itself before them as they approach La Paz. Three railroads lead to the canyon, and two of them have been extended down the steep sides.

Near the heart of the city is the imposing national Capitol, occupying one side of the Plaza Murillo, the most important public square. Near by are the President's and the legislative palaces and a magnificent cathedral. The latter, a hundred years in building, is one of the largest churches in South America, covering an area of more than 43,000 square feet. La Paz is also the seat of a National Museum, housing collections of priceless value, and its municipal theater, a beautiful structure completed in 1909, has a seating capacity of 1,500.

The private homes are nearly all built of stone, and many of them are embellished with courts, balconies and carved portals. There are many wide and beautiful streets, such as the Alameda promenade as well as steep and winding ones; the more important thoroughfares are lighted by electricity. An electric street-car line traverses the chief business and residential streets. The city has many educational institutions, including the National University, the School of Applied Arts, the National School of Commerce, a military college, the school of war for officers (1917), the American Institute and a normal college for training teachers of the Indians. The city's industries are not important, but La Paz carries on a thriving trade in mineral and farming products. The town was founded in 1548 by Mendoza, the Spanish explorer. Population, 1931, 147,000.

LA'PIS LAZ'ULI, or **LAZ'URITE**, a mineral composed of aluminum and sodium sulphide and several less important substances. It occurs massive and in crystals and is a

beautiful ultramarine blue. The best specimens come from China, Siberia, Persia and Chile. Lapis lazuli was much used by the ancients as a setting for jewelry and for fine inlay work and ornaments. It is similarly used to-day, though less extensively.

LAPLACE, *lah plas'*, PIERRE SIMON, Marquis de (1749-1827), the greatest of French astronomers. His parents were very poor and unable to give him an education, but through the assistance of influential friends he was enabled to go to school, and at the age of twenty he became professor of mathematics in the military school, through the influence of D'Alembert, who was his patron. He is especially known by his important work in regard to improvements of the lunar theory, the question of tides and the stability of the solar system. He was the originator of the theory known as the nebular hypothesis (which see), for years generally accepted as a solution of the problem of the stability of the universe, but now generally discredited. His most noted works are *Celestial Mechanics* and *Exposition of the System of the Worlds*.

LAPLAND, a territory in the extreme north of Europe, containing about 150,000 square miles, but having no definite boundaries, for it is not a political division. The name was given because it is the home of the Lapps, who for centuries have peopled this section. On the north the Atlantic and Arctic oceans merge. The land is under the sovereignty of Norway, Sweden, and Finland; the boundary lines are not definite on the south, but are well marked otherwise.

The Lapps, short and muscular, with flat nose, high-cheek bones, large heads, and scanty beards, number about 25,000. They are ignorant, dirty, simple-hearted, and hospitable; they have few towns, but numerous straggling settlements; many families are nomadic. Reindeer are the main dependence for transportation, clothing, and largely for food. Three groups are recognized among the Lapps. The Mountain Lapps are nomadic; the Sea Lapps live along the ocean, and are fishermen; the River Lapps, the most progressive, live in rude settlements.

Existence is hard. There are nine months of bitter winter.

LA PLATA, *la plah'tah*, ARGENTINA, a modern and progressive city, founded in 1882 as the capital of the province of Buenos Aires. It is situated five miles from its

port, on the estuary of the Rio de la Plata and thirty-two miles southeast of the city of Buenos Aires, with which it has rail connection. La Plata is laid out on the same plan as the capital city of the United States, and has beautiful squares and parks, handsome public buildings, one of the best museums in South America and a fine observatory. At the head of the excellent public school system is a national university, with an enrollment of over 2,100. The city is connected by a canal with its port, Ensenada. It carries on actively the manufacture of cotton and woolen goods. Population, estimated, 119,000.

LA PLATA, RIO DE. See RIO DE LA PLATA.

LA PORTE, la port', IND., the county seat of La Porte County, twelve miles from Lake Michigan and sixty miles southeast of Chicago, on the Pere Marquette, New York Central, and Nickel Plate railroads. There is an emergency landing field. The city is in a farming region, and its manufactures include woolen goods, threshing machines, tractors, pianos, slicing machines and other articles. There are beautiful lakes in the vicinity, and the place has become an attractive and popular summer resort. There are a fine courthouse, library and hospitals. The city's main street is on the Lincoln Highway. It was settled in 1830 and chartered as a city in 1852. Population, 1930, 15,755.

LAPWING, a beautiful bird of the plover family, found in Europe and Asia. It is about the size of a pigeon, has a glossy green back, jet-black throat and white under parts; the head is surmounted by a handsome crest. The bird is often called *peewit*, a name suggested by its plaintive cry. The eggs are a rare table delicacy.

LARAMIE, lar'a me, Wyo., the county seat of Albany County, fifty-six miles northeast of Cheyenne, on the Big Laramie River and on the Union Pacific and the Colorado, Wyoming & Eastern railroads. It is located on an elevation of over 7,000 feet, in the neighborhood of rich deposits of coal, iron, lead and other minerals. The city has extensive railroad shops, cement mills, rolling mills, oil refineries, soda works, flour mills and glass works.

Laramie is the seat of the state university, the state agricultural college and experiment station, and the state fish hatchery, and is the see of the Protestant Episcopal bishopric of Wyoming. There are five hospitals and a

Carnegie Library. The railroad company started the first sale of lots in what should comprise the future city in April, 1868. Population, 1910, 8,237; in 1920, 6,301, a decrease of 23 per cent.

LARCENY, lah'se ny, the fraudulent appropriation of the property of another person without that person's consent. To constitute this crime the removal of the goods to any distance is not necessary, but the article must completely pass, for however short a time, into possession of the criminal. The common law restricted the classes of things the appropriation of which is larceny, to personal property, but this distinction has been abolished by later statutes. Larceny was formerly divided into two kinds, *grand* and *petty*, according to the value of the thing stolen, but the distinction is now abolished in many states. Petty larceny is charged when the value of the stolen goods does not exceed \$15, or thereabouts, the amount varying in different states. The penalty varies, but in ordinary cases a person convicted of larceny is generally liable to imprisonment with hard labor for not more than two years; on second conviction not more than ten, nor less than four. See ROBBERY; BURGLARY.

LARCH, the common name of a genus of trees belonging to the cone-bearing family.



LAPWING

but not themselves fragrant. In New England and Canada the native species is known as *hackmatack*, and in the Western and Southern states the same tree is known as *tamarack*. This American larch often grows to a height of seventy feet in swampy places, where the soil is deep. It has a slender trunk and horizontal branches which are covered with fine, needlelike leaves that fall in autumn. The small cones turn to a beautiful deep red before they ripen. The wood, which is compact and durable, heavy and difficult

to burn, is valued for fence posts, railroad ties, telegraph poles, and in shipbuilding.

LARD, the fat of the hog. Lard is obtained by extraction from the fatty portions of the carcass, in kettles heated by steam. It is clarified by heating to a high temperature, straining and then cooling by refrigeration. Just before it solidifies, the lard is run into pails, barrels or other vessels for marketing. The best quality, called *leaf lard*, is found in the fat which surrounds the kidneys, and this is employed in pharmacy for the preparation of ointments. When subjected to pressure the oleine is liberated, forming lard oil, which is much used as a lubricant for machinery. Lard is used in cooking, in the manufacture of soap and for other purposes.

LAREDO, *la ray'do*, Tex., the county seat of Webb County, 140 miles southwest of San Antonio, on the Rio Grande, opposite Nuevo Laredo, and on the Missouri Pacific, the Texas-Mexican, and the Rio Grande & Eagle Pass railroads. The city is in a fertile agricultural and stock-raising district, and is an important shipping point between the United States and Mexico. Here is America's only antimony smelter, and the city contains car and machine shops, brick and tile works, cotton gins, ice plants, a tannery, foundries and other factories. Laredo has a fine courthouse and jail, an old Spanish cathedral, the Mexican National and Mercy hospitals and Ursuline Convent, and it is the seat of Holding Institute (Methodist) and four other church schools. The place was settled by the Spaniards in 1767, and was first incorporated in 1848. It is the second largest American city on the Rio Grande. Population, 1920, 22,710; in 1930, 32,618.

LARES, *lay'reez*, **AND PENATES**, *pe nay'teez*, the lesser Roman gods who presided over the home and over families. The Penates were gods from the beginning, while the Lares were erstwhile human beings who came back after death to watch over their friends or descendants. As far as the two classes of deities had separate provinces, it was believed that the Penates protected the interior of the home and watched over its happiness, while the Lares guarded it from danger from without. Small images of these deities were kept in the home and worshiped. When a family moved, it took with it its Lares and Penates and provided a place for them before the welfare of the family was looked after.

LARK, a song bird related to the finches, having a strong, short bill, nostrils covered with feathers, forked tongue and the power to raise the feathers on the back part of its head into the form of a crest. Larks are found generally distributed over the old world, but the only species in America is the *horned lark*. The larks live upon the ground, feeding on worms and larvae, and bring forth two broods in a year. The best known is the *English skylark*, which is celebrated for the prolonged beauty of its song, which it utters as it rises high in the air in spiral flight. It usually sings early in the morning and only during the nesting season. No bird has been more celebrated by poets than this and Shelley's *Ode to the Skylark* is one of the most beautiful poems in the English language. A few of these birds have been introduced into the United States, and some are now living wild on Long Island and elsewhere in the East.

The so-called *titlark* and *meadow lark* are not true larks. The meadow lark (which see) is an oriole. For the titlark, see **PITIT**.

LARK'SPUR, the common name of a genus of plants belonging to the buttercup family. Some medicinal properties are possessed by several species, but the plants are cultivated principally for their handsome, irregular flowers, which grow in large open clusters or in spikes. One hundred or more species are found wild in North America, but the most beautiful are natives of Asia. Gardeners have produced handsome double flowers with a great variety of coloring.

LARVA, *lahr'va*, in natural history, the name applied to the first stage in the life history of insects, and to the early form of any animal, in which there is little resemblance to the parent. In the latter sense the tadpole is the larva of the frog. In insects this is the grub or caterpillar stage. When the insect first appears, it is usually in the form of a maggot, or small worm, as it is popularly, though wrongly, called. The larval stage is usually the active stage of insect life, during which the animal accomplishes most of its growing. From time to time the larva sheds its skin to permit of greater growth. See **METAMORPHOSIS**; **INSECTS**; **CATERPILLAR**.

LARYNGITIS, *lar in j'i'tis*, inflammation of the larynx, the organ that produces the voice. It may be acute or chronic, the latter form being a common affection of

public speakers and singers who overtax the voice. The chief symptoms of acute laryngitis are chills and fever, rapid pulse, sore throat, hoarseness, difficulty in swallowing and a painful cough. The membrane of the glottis, or opening between the pharynx and larynx, becomes inflamed, and this makes the breathing difficult and noisy. An attack usually lasts four or five days, and the symptoms are most acute at night. This form of the disease is caused by exposure to cold, breathing dust or irritating gases, or drinking irritating liquids. Measures of relief include cold pack on the throat, inhalations of warm steam and the use of such drugs as the attendant physician may prescribe. Persistent hoarseness is the characteristic symptom of a chronic laryngitis. Tubercular laryngitis which often accompanies consumption of the lungs, is usually fatal.

LARYNX, *lar'inks*, the organ of voice, situated between the hyoid bone and the upper part of the trachea, communicating with the pharynx above and the trachea below. It is composed of nine cartilages. The *cricoid* cartilage has the shape of a signet ring, with the broad part toward the back of the throat, and is attached by fibrous tissue to the upper part of the trachea. The two *arytenoid* cartilages are placed on top of the wide part of the cricoid, with which they articulate in a movable joint. The vocal membranes are attached to them. The two halves of the largest cartilage, the *thyroid*, meet in an angle in front, but its sides do not form a complete ring. The projection of this cartilage is known as *Adam's apple*. The *epiglottis* is attached to the top of the thyroid in such a manner that it may close the opening from the pharynx to the larynx during the act of swallowing.

The vocal cords are two membranes which extend from the arytenoid cartilages across the larynx to the thyroid. They may be compared to the head of a drum, the membrane of which has been slit across the middle. The length and tension of these membranes are controlled by the movements of the arytenoid cartilages. In quiet breathing the slit, called the glottis, is wide open, being narrow in front and wider behind. A set of muscles pulls the arytenoid cartilages backward, thus stretching the vocal cords; another set pulls the same cartilages toward the thyroid cartilage, making the vocal cords slack; a third

set pulls the arytenoids toward each other, making the glottis narrower behind, while a fourth set has an opposite effect. The space above the vocal cords is triangular in shape, and its mucous lining, just above them, makes on each side a fold known as the false vocal cords. See VOICE; LARYNGITIS.

LA SALLE, *la sa'*, ILL., a city in La Salle County, 100 miles southwest of Chicago, on the Illinois & Michigan Canal and on the Chicago, Burlington & Quincy, the Chicago, Rock Island & Pacific and the Illinois Central railroads. It lies on high bluffs along the Illinois River, near productive bituminous coal fields. Other important industries are zinc smelting and the manufacture of cement, brick, sulphuric acid, implements, clocks and glass. The city has a Carnegie Library, a Federal building, a township high school and a hospital. The town is near Starved Rock and Dear Park, the most beautiful spots in the state. The place was settled in 1830 and was named in honor of La Salle, the explorer. Population, 1920, 13,050; in 1930, 13,149.

LA SALLE, RENÉ-ROBERT CAVELIER, Sieur de (1643-1687), a French explorer in America, the first Frenchman to reach the mouth of the Mississippi. In 1666 he emigrated from France to Canada and built a trading post near Montreal. Stories told by the Indians, about a great western river, and a natural love of adventure lured him from his business enterprise, and between 1669 and 1682 he explored a considerable portion of the Great Lakes and Illinois Valley regions. In one of these expeditions his party discovered the Niagara River. In 1682, with the official backing of Governor Frontenac and the French court, La Salle and his lieutenant, Tonty, descended the Mississippi River to its mouth. La Salle, dreaming of a great inland empire under the flag of France, named the river valley Louisiana in honor of Louis XIV. In 1684 he organized a party of colonists, but a mistaken landing at Matagorda Bay caused dissension, and on the bank of the Trinity River La Salle was shot and killed by one of his own followers.

LASSA, *lah'sah*. See LHASA.

LASSALLE, *la sa'*, FERDINAND (1825-1864), a celebrated German socialist, educated at the University of Berlin. He first became prominent as a leader during the democratic troubles of 1848, and was imprisoned for a year. In 1861 he published

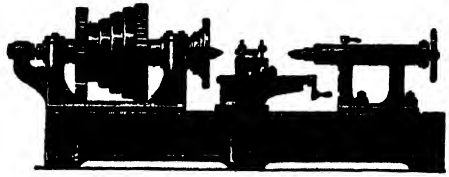
his *System of Acquired Rights*. His organizing of the working classes led to an accusation of sedition, and he was imprisoned for four months. In May, 1863, he founded a labor union, whose object was to secure political representation for labor. Lassalle may be regarded as the founder of the German Social Democratic Party.

LAS VEGAS, *las va'gas*, N. M., chartered as a city in 1896, is the county seat of San Miguel County, forty-eight miles east of Santa Fé, on a branch of the Pecos River and on the Atchison, Topeka & Santa Fé Railroad. The city is composed of two parts, the Mexican Las Vegas and the modern city, known as East Las Vegas until it was incorporated as the city of Las Vegas. The city is located between the Rocky Mountains and the plains. It has a large trade in wool and contains wool scouring works, flour mills, wagon shops, foundries, and other factories. The city contains the New Mexico Normal University, the state insane asylum, a Carnegie Library and a sanitorium. The famous Las Vegas hot springs are six miles from the city. There are about forty of these springs, and on account of their curative properties they have become a favorite resort for invalids. It is to these springs that the fame of Las Vegas is largely due. Population, 1930, 4,719.

LATERAN, a Roman Catholic Church at Rome, built originally by Constantine the Great and dedicated to Saint John of Lateran. The site on which the buildings stand originally belonged to Plautius Lateranus, who was put to death by Nero. The Lateran is the principal church of Rome. In connection with it is a palace, now used as a museum of statues and antiquities, and several other buildings. Every newly-elected Pope takes solemn possession of the church, and from its balcony he bestows his blessing on the people. The palace and the church belong absolutely to the Popes, having been given them by the Italian government in 1871. Pope Leo XIII and many of his predecessors are buried in the Lateran.

LATHE, *layth*, a machine for turning and polishing flat, round, cylindrical and oval objects of wood, ivory or metal. The object worked receives a rotary motion. The important parts of the lathe are the frame, the balance wheel, the two heads, to which the object to be turned is fastened, and the rest for the chisel. One head slides in the groove in

the frame and can be firmly fastened at any point by a screw. This admits of turning articles of different lengths. A belt passes from the balance pulley over another in the head and imparts the motion. A series of



LATHE

pulleys of different sizes on the balance wheel and head enable different rates of speed to be maintained. A lathe for turning wood has a much higher speed than one for turning metal. The tools used are chisels made especially for the purpose. Small lathes are often run by foot power, but large ones use steam or electric power. Steam power is being rapidly supplanted.

LATHEROP, JULIA CLIFFORD (1858-1932), an American social settlement authority, the first chief of the Children's Bureau in the Department of Labor. She was born at Rockford, Ill., studied at Rockford College, and later at Vassar College, where she took her degree in 1880. Her chief interest was in the care of the insane, and she visited European institutions and made a study of the methods in use there; but other departments of philanthropic work also claimed her attention, and she helped to establish the Chicago juvenile court and the Chicago School of Civics and Philanthropy. Much of her time after 1899 was spent as a worker at Hull House in Chicago. In 1912 President Taft appointed her to be the head of the newly-formed Children's Bureau, which post she resigned a few years before her death. See CHILDREN'S BUREAU.

LATIMER, HUGH (1490-1555), an English prelate, reformer and martyr. He was educated at Cambridge, was made chaplain to Henry VIII in 1530 and during the ascendancy of Anne Boleyn in 1535 he was appointed bishop of Worcester. In 1539 he resigned his bishopric, not being able to accept the Six Articles, and lived in privacy for six years. On coming to London, he was put in prison, but on the accession of Edward VI was released and became popular at court. When Mary ascended the throne, Latimer was condemned as a heretic and burned at the stake.

LATIN LANGUAGE. Latin is a branch of the Indo-European, or Aryan, family of languages. It was spoken by the people of Central Italy perhaps as early as 1500 B. C. In the period of the Roman Republic and the Empire it received its literary form, and it is to the language of that time the designation *classical* is given. During the last two centuries of the Empire, Latin became much corrupted through contact with other languages, and this process was still more marked after the fall of Rome. By the eighth century it had ceased to be a generally spoken tongue, and in the several countries where Roman civilization had been established, it had developed into the several tongues which have survived in the modern Romance languages. The chief representatives, besides Italian, are French, Spanish, Portuguese and Rumanian. In Great Britain the effect upon the language of the first contact with Latin was not considerable, owing to the early extinction of Roman supremacy there and the overpowering inroads of Germanic tongues. Of the largest proportion (about three-sevenths) of words of Latin origin in the English language, the most came in through the Norman Conquest (see ENGLISH LANGUAGE).

It is an interesting fact that the Romance tongues are descended, not from classical Latin, but from what is known as folk-Latin, the corrupted idiom of later popular speech. During the Dark Ages, Latin continued, in a corrupted form, to be the language of the Church, law and learning, and in some countries it remained so until within two centuries. In still later times it was employed, restored to its classical form, in learned writings and as a means of international communication. It was the clergy who preserved the Latin language and literature in the Dark Ages, and to the convents were carried the remnants of the libraries.

In structure and vocabulary Latin is more closely related to Greek than to any other Indo-European language, an interesting evidence of the probably close relationship of the two races. The Latin language is remarkable for its accuracy of expression and its perfect mechanical structure. It was, indeed, well fitted for its important service in the law. As Latin has never ceased to be spoken as a learned language, its pronunciation has followed in general the principles governing the language of each country in

which it is used. In America a method known as the *Roman* is, however, now almost universal in the universities, colleges and high schools of the country. This is an attempt to attain to the real pronunciation of Latin in the time of Cicero. The vowels are pronounced almost as in Italian, but the consonants as in English, with the exception that *c* and *g* are always hard; *r* is trilled; *s* is voiceless; *z* is like *dz*; *ph*, *th* and *ch* are really aspirated consonants. In England the *English method* is still used in the schools, the Latin words being pronounced as if they were English.

LATIN PHRASES. See page 1373.

LATITUDE, in geography, is distance north or south of the equator. A place is in *north latitude* or *south latitude* according as it is north or south of the equator. The highest or greatest latitude is 90°, that is at the poles; the lowest or smallest, 0°, at the equator, between which and the poles any number of parallel circles called *parallels of latitude* may be supposed to be drawn. One method of finding the latitude of a place is by measuring the altitude of the polar star, the latitude of the observer being equal to the altitude in degrees of the star above the horizon. When the latitude and longitude of a place are given, its position on a map is easily found.

Related Articles. Consult the following titles for additional information:

Antarctic Circle	Equator	Tropics
Arctic Circle	Longitude	Zone

LATIUM, *la'she um*, the ancient name of a district of Italy, lying midway on the western coast between the Apennines and the Mediterranean, extending between Etruria and Campania and inhabited by Latins, Volsci, Aequi and other peoples.

LATTERDAY SAINTS, officially The Reorganized Church of Christ of Latter Day Saints, a religious body which claims to be the true successor of the Mormon Church established by Joseph Smith. The headquarters are at Independence, Mo., the present head of the church is Frederick Smith, grandson of Joseph Smith. The reorganized church has no connection with the Mormons. The denomination has about 70,000 members and 800 churches. See MORMONS.

LATVIA. **FREE STATE OF**, on the Baltic between Estonia and Lithuania, is inhabited chiefly by Letts. The independence of the country was proclaimed in November, 1918,

and it was recognized by most of the Powers, and admitted to the League of Nations in September, 1921. It is made up of several former Russian provinces, with an area of about 25,000 square miles. The population in 1930 was 1,900,045; of the capital city, Riga, 377,917.

When a part of Russia, the land was held in large estates, and the people were practically serfs. With freedom came a breaking up of these into small holdings, and purchase by the peasants was possible. Therefore, agriculture is the leading occupation. Flax, rye, oats, potatoes, and barley are staple crops. Manufacturing, except in the lumber industry, is not important.

The government is republican in form, with a President, elected for three years. There is a Parliament of 100 members, elected for three years.

The Letts and their allied people, the Lithuanians, have occupied the East Baltic region as long as Europe has had a history. Successively they have been under the rule of the Germans, Swedes, Danes, the Poles, and Russia. Between 1795 and 1917 they were under the Russian yoke; the Lenin Communist government gave them their freedom.

LAUD, WILLIAM (1573–1645), archbishop of Canterbury in the reign of Charles I. He was made archbishop in 1633, and was twice offered the Cardinal's hat. As archbishop he instituted rigorous proceedings, even to imposing fines, imprisonment and exile against all who would not conform to the Church of England. In 1640 the Long Parliament impeached him for high treason. He was beheaded on Tower Hill.

LAUDANUM, a fluid preparation, highly dangerous to use as a medicine, is prepared from opium. It was once commonly employed in "soothing syrup," to relieve infant colic and pains, but even small doses often proved fatal. When laws forced disclosure of contents of medical nostrums, the use of laudanum greatly decreased. Laudanum contains 48 grains of opium in each fluid ounce; in color it is brownish-red.

LAUDER, HARRY, Sir (1870–), a popular composer and singer of Scotch songs, born at Portobello, Scotland. Before he began his professional career he worked in a flax-spinning mill and as a coal miner. His regular stage career began with touring the British Isles, and in the music halls in London he speedily won an enviable reputation.

Subsequently he repeated his success in America, where, season after season, from 1907, he drew immense and enthusiastic audiences. He led a company of bagpipers on a recruiting tour through England in 1915, and after America entered the war they toured the United States to raise war-relief funds. Lauder's son died in Flanders while fighting for the cause. The words and music of the ballads sung by this popular comedian are of his own composing, and he renders them in a manner that is often imitated but never duplicated. Besides songs, he has written *Harry Lauder at Home and on Tour* and a Scottish comedy. Lauder is his stage name; his real name is MacLennin. In 1919 he was knighted by King George "for empire service rendered during the war."

LAUGHING, *lahf'ing*, **GAS**, nitrous oxide or nitrogen monoxide or protoxide of nitrogen; so called because, when inhaled, it usually produces exhilaration. It is administered by dentists to deaden pain and produce unconsciousness during the extraction of teeth, as its effects are usually less severe than those of ether or chloroform. A recent substitute in dental operations is a mixture of nitrous oxide and oxygen. See **NITROGEN**.

LAUREATE, *law're ate*. See **POET LAUREATE**.

LAUREL, a plant native to Northern Africa and Southern Europe. It is cultivated in gardens, not only on account of its elegant appearance, but also for the aromatic fragrance of its evergreen leaves. The fruit, which is of a purple color, and the leaves, have long been used in medicine. From the fruit of the sweet bay, a species of laurel, several valuable oils are extracted; the cherry laurel yields a volatile, poisonous oil when its leaves are distilled in water. The name *laurel* is also given in America to species of rhododendron and other plants having thick leaves of a dark, glossy green. In ancient times heroes and soldiers were crowned with wreaths of bay leaves, and thus the terms *laurels*, *bays* and *laurels* came to be significant of honor.



LAUREL

